

~~EXHIBITION~~
BRITISH MUSEUM (NATURAL HISTORY)

SPECIAL GUIDE No. 5

GUIDE TO THE EXHIBITION
OF
ANIMALS, PLANTS,
AND
MINERALS
MENTIONED IN THE BIBLE



SECOND EDITION

LONDON
PRINTED BY ORDER OF THE TRUSTEES
OF THE BRITISH MUSEUM

1911

[PRICE SIXPENCE]



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PREFACE.

It was thought by the Trustees of the British Museum that an Exhibition of Animals, Plants, and Minerals mentioned in the Bible would form an interesting supplement to the literary and historical Biblical Exhibition which has been arranged at Bloomsbury for the Tercentenary of the Authorised Version, and instructions were given for its preparation. The result is the collection now placed in one of the bays of the Central Hall of the Natural History Museum.

The Animals and Minerals, respectively, have been selected, arranged, and labelled by Mr. Lydekker and Dr. Herbert Smith, under the general supervision of the Keepers of Zoology and Mineralogy; the Plants have been selected, arranged, and labelled by Dr. Rendle, the Keeper of Botany.

The zoological and botanical parts of the present guide-book are virtually reprints of the exhibited labels, and the information given on the latter has been to a considerable extent derived from the late Dr. H. B. Tristram's "Natural History of the Bible," the first edition of which was published in the year 1867.

As regards the Biblical Minerals, scarcely any of them were found in Palestine itself or were brought from localities now known; they are not considered in Dr. Tristram's work, and, notwithstanding all that has been written about them during many centuries, there is still great uncertainty as to the original signification of the Hebrew and Greek names. As the subject presents much difficulty, I have contributed to the guide-book a short essay showing how modern interpretations of the ancient names of Biblical Minerals have been deduced.

L. FLETCHER,

Director.

BRITISH MUSEUM (NATURAL HISTORY),

December 21st, 1911.

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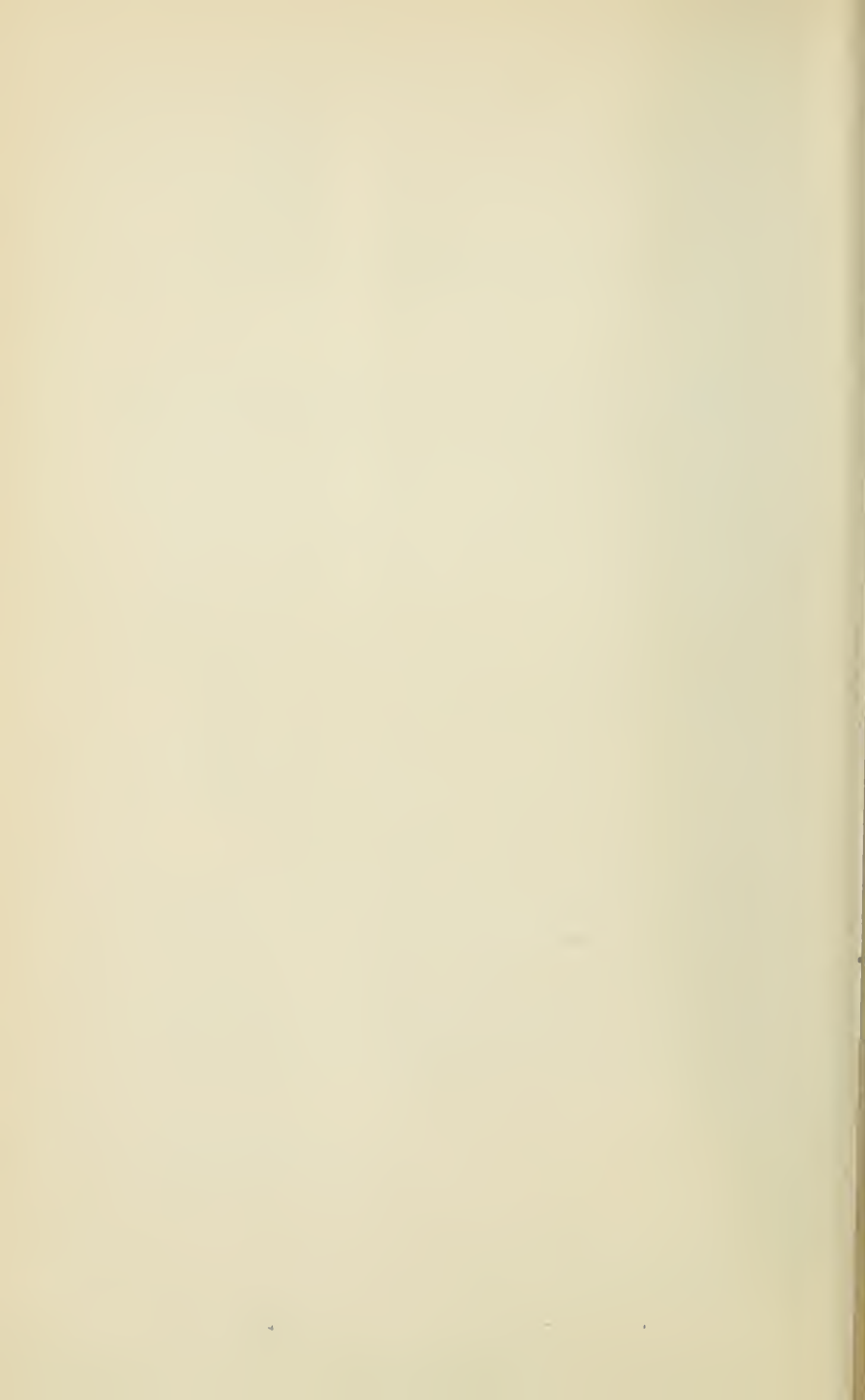


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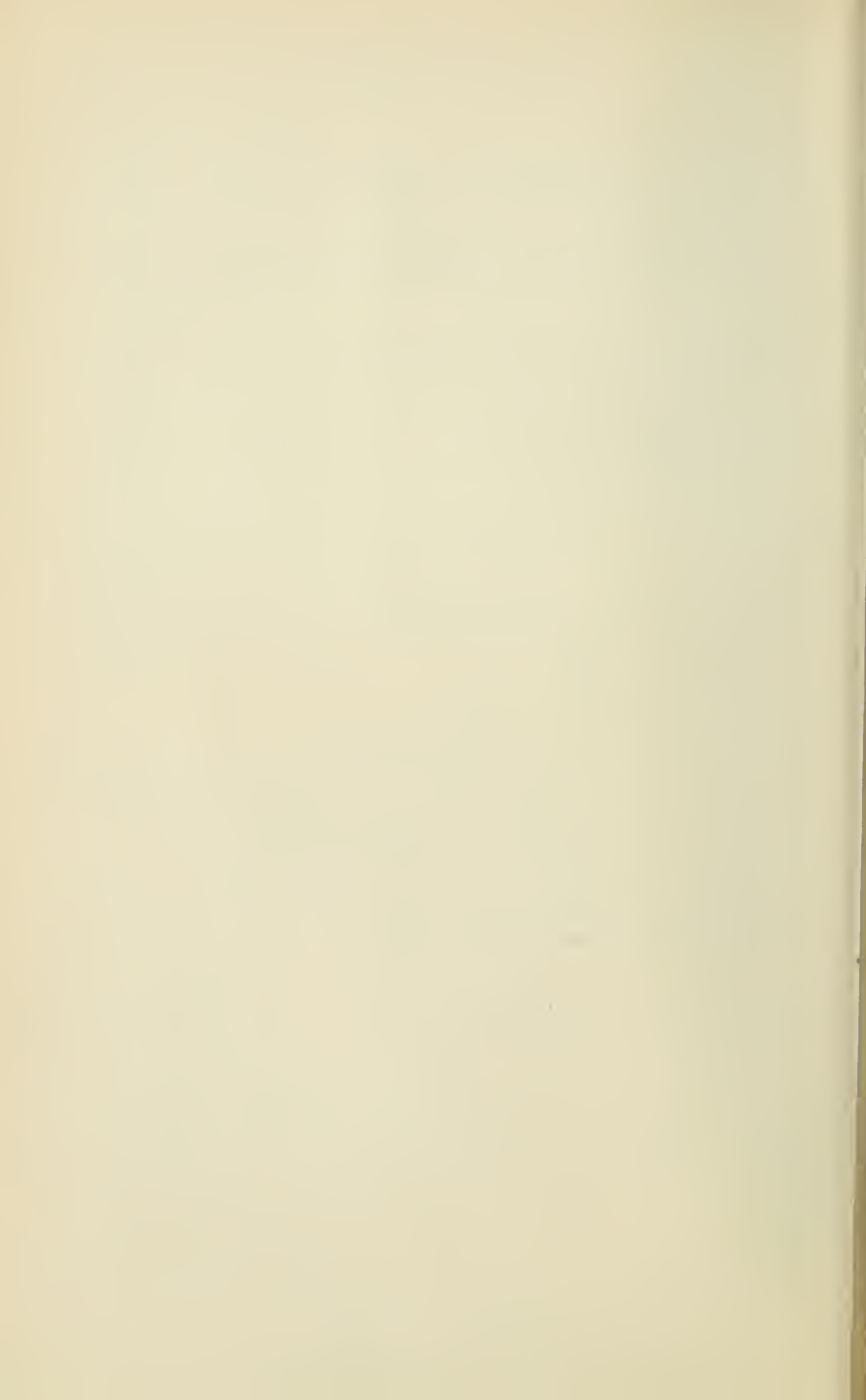
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GUIDE

TO

ANIMALS, PLANTS, AND MINERALS

MENTIONED IN THE BIBLE.

I.—ANIMALS.

THE proper identification of the various animals mentioned in the Old Testament is in many cases a matter of extreme difficulty ; and this for several reasons. For in a number of instances we have even now no definite clue as to the real signification of the old Hebrew names of animals mentioned in the sacred text ; and when the authorised translation was made three centuries ago the difficulty was of course very much greater, owing to the imperfect knowledge of natural history at that time. Since that date important clues have been obtained by correlating the Hebrew words with current Arabic and Coptic names of animals, and in this way many of the difficulties have been more or less satisfactorily solved, although in other cases little or no progress has been made ; and it seems probable that the signification of some of the Hebrew animal names will always remain an enigma. A further difficulty arises from the circumstance that some of the Hebrew names appear to refer to purely mythical creatures.

In this country the pioneer in research of this subject was the late Canon H. B. Tristram, whose work on "The Natural History of the Bible" was published by the Society for Promoting Christian Knowledge in 1867. In the case of mammals it happened, however, that the author was under the impression that certain large species of North African antelopes, such as the bubal hartebeest, the addax, and the white, or sabre-horned, oryx, ranged into Syria, whereas they do not, as a matter of fact, occur anywhere east of the Nile. This

rendered some of the Canon's identifications of Hebrew Scriptural names incorrect. It may be added in this connection that it is still uncertain whether the Arabian Oryx (*Oryx beatrix*) of the Syrian and Arabian deserts may not be one of certain unidentified animals, such as the "Pygarg," mentioned in the Bible.

Since many of the animals referred to in the Bible are of large bodily size, it has been found impracticable to show them in the present exhibition otherwise than by specimens of their heads and horns or by pictures.

Before proceeding to notice the various species which can be more or less satisfactorily identified, a few words may be devoted to certain names which either cannot be identified or which are not worthy of special labels. Among those of the first type is "Satyr," which probably relates to a purely mythical animal, although it has been proposed to connect the name with the great dog-headed Baboons (*Papio*) of Egypt and Arabia. Again, the bird indicated by *shahaph*—translated "Cuckoo" in the Authorised Version—cannot be identified.

For "Weasel" the reader may refer to the heading MOLE. The word rightly translated "Mouse" appears to be generally used in a wide sense, although in one instance it clearly refers to the Continental Short-tailed Field-Mouse (*Microtus*, or *Arvicola, agrestis*). "Hare" relates to the common Syrian species, *Lepus syriacus*.

In connection with the words "Cock" and "Hen," which occur in the New Testament, it may be mentioned that there is no reference in the Old Testament to domesticated poultry, which were probably first introduced into Judæa after the Roman conquest.

As regards Fishes, of which there is frequent mention in the Bible, there is, in most cases at any rate, no possibility of making any specific identification, although "Eel" doubtless refers to one or both of the two species found in Syrian waters.

HORSE. MULE. ASS.

Horses were used in Biblical times chiefly in war, and were then a comparatively recent introduction. No reference is made to Mules till the time of David; but after that date Horses and Mules are often mentioned together. In some cases the word translated "Dromedaries" really means Mules. The word "Ass" refers to the well-known domesticated animal, whose wild relative (*Equus asinus africanus*) inhabits Nubia; but "Wild Ass" indicates a very different animal, the Syrian Onager (*E. onager hemippus*), which

still inhabits Palestine, and belongs to a group of species in some degree connecting the Horse with the Ass. The Onager is represented in the case on the left side of the Bay by pictures. The "pale Horse" of Rev. 6, the translation of the Greek *chlōros hippos*, probably indicates a dun Horse, a type regarded in some countries as very ancient, but of bad quality; while the "red Horse" of the same chapter, the translation of *purrhos hippos*, probably denotes a chestnut.

UNICORN.

The Hebrew word *rēm*, translated "Unicorn" (Job 39, 9-12), indicates a two-horned animal; the proper rendering of the sentence "the horns of unicorns" (Deut. 33, 17) being "the horns of a unicorn." It is probable that the animal referred to is the extinct Wild Ox or Aurochs (*Bos taurus primigenius*), which, as indicated by Assyrian sculptures, of one of which an illustration is shown in the case, was living in Asia Minor in Biblical times. By Dr. Duerst the Syrian Aurochs is considered a distinct species.

If this be correct, the "wild bull in a net" (Isa. 51, 20) must refer to a different animal—the Hebrew *tó*—although the species cannot be determined. It may be mentioned that at the present day the word *rim*, probably the equivalent of *rēm*, is applied by the Arabs to a N. African species of Gazelle; the name having perhaps been transferred to that animal after the extermination of the Aurochs. A cast of a skull of the latter animal is shown in the North Hall, and a photograph of another skull is exhibited in the left-hand wall-case.

CATTLE.

Cattle, which were used in Biblical times for ploughing, treading-out corn, and for draught, as well as for dairy purposes, food, sacrifice, etc., are referred to by several names, indicative of sex, age, etc. Like those of ancient Egypt (Fig. 1), the Cattle of Palestine were derived from the Humped Ox or Zebu of India, of which a stuffed specimen is exhibited in the North Hall; but while in some instances the hump, as shown in two of the illustrations in the left-hand wall-case, was retained, in other instances, as in the group of Oxen treading-out corn, it had been eliminated by selection. A skull, with the horns, of the ancient Egyptian Ox is shown in the upper part of the case; and below this is an illustration of the Indian Zebu.

FIG. 1.



ANCIENT EGYPTIAN OX.

FIG. 2.



SYRIAN FAT-TAILED SHEEP.

From Murray's "Bible Dictionary."

SHEEP.

The ordinary Sheep of Palestine belong to the white fat-tailed breed, in which the rams carry large horns (Fig. 2). From the mention of "the fat, and the rump" (Ex. 29, 22) it seems probable, however, that the fat-rumped breed, commonly known as the "Hedjaz Sheep," of which a mounted specimen is shown in the North Hall, was also found in Syria in Biblical times. Sheep akin to European breeds are stated by Tristram to occur in Syria. The earliest breed in Egypt appears to have become extinct before the time of the Pharaohs, and was a long-legged Sheep, with spiral horns, lop ears, a fringe on the throat of the rams, and a long tail; the colour being light, light with dark blotches, or wholly dark. It was related to the Maned Abyssinian and Hausa Sheep, of which specimens are shown in the North Hall. During the Pharaonic epoch this Sheep was replaced by a fat-tailed breed, in which the limbs were shorter, the tail was thickened, and flattened, and the horns generally of the so-called "Ammon" type, while the coat was probably woolly. A skull of this Sheep, from an Egyptian tomb, is exhibited in the upper part of the case.

GOAT.

Several Hebrew words are translated "Goat," "She-Goat," or "Wild Goat" in the Bible. Of the local domesticated breeds, the Syrian, or Mambar, Goat is tall and long-limbed, with very long ears, and shaggy silky black hair. Skulls of this breed from an Egyptian tomb are exhibited in the upper part of the case. In the Egyptian, or Theban, Goat the limbs are long, the horns short or wanting, the head small, with a convex profile, and the beard generally absent; the short hair is usually reddish brown, tending to yellow on the limbs, but may be slaty grey or spotted. Specimens may be seen in the North Hall. The word *ya'él*, translated "Wild Goat" (Job 39, 1), probably indicates the Beden or Sinaitic Ibex (*Capra nubiana sinaitica*); but it is possible that this or another word may in some instances refer to the Wild Goat (*Capra hircus xgagrus*) of Mount Ararat. A picture of the Sinaitic, or Nubian, Ibex is exhibited in the case.

CHAMOIS.

The Hebrew *zémer*, which appears akin to the Arabic *zamar*, indicates a mountain animal, and is translated "Chamois" in

Deut. 14, 5. But that species is unknown east or south of the Taurus range, and it has been suggested that the animal referred to is the African Wild Sheep, or Udad (*Ovis lervia*, or *tragelaphus*), which inhabits the mountains of Upper Nubia, although not ranging east of the Nile. Possibly it may be Gmelin's Sheep (*Ovis orientalis*), which occurs in South-eastern Asia Minor, unless indeed the original rendering is correct.

ROEBUCK. HART. HIND. FALLOW DEER.
"PYGARG."

Much confusion exists in the translation of the Hebrew words thus rendered. For instance *çébi*, equivalent to the Arabic *zebi*, is translated "Roebuck" in Deut. 12, 15, but really signifies the Dorcas Gazelle (*Gazella dorcas*), which abounds on the plains of Syria, and perhaps also the Palestine Gazelle (*G. merrilli*). On the other hand, *yahmâr*, translated "Fallow Deer" in Deut. 14, 5, signifies the Roebuck (*Capreolus caprea*), which still inhabits the woods of Gilead. It has been identified with the Bubal Hartebeest (*Bubalis boselaphus*), but that species is unknown in Asia or east of the Nile. *Ayyâl*, translated "Hart" in Deut. 12, 15, 22, indicates the male Fallow Deer (*Cervus dama*), which is still found on Mount Tabor; "Hind" being the female of the same species. The animal indicated by "Pygarg," the translation in Deut. 14, 5, of the Hebrew *dishôn*, is uncertain. *Pygargus* was used by Herodotus for a North African Antelope with a white rump-patch; and if the Hebrew "Pygarg" really indicates a white-rumped animal, a species allied to the Goitred Gazelle (*Gazella subgutturosa*) of Persia might be referred to. Heads, horns, and antlers of some of the species mentioned above are exhibited in the upper part of wall-case on the left.

CAMEL. DROMEDARY.

Camels of the single-humped Arabian kind (*Camelus dromedaricus*) were employed in ancient Palestine for draught, riding, and in war, and their hair was woven into garments. Dromedarics are swift riding Camels. In some instances "Dromedary" in the Bible indicates a superior breed of Horse. Camels do not appear on the Egyptian monuments, whence it has been inferred that they were unknown in ancient Egypt; but they are mentioned in the Anastasi Papyrus (No. 1), p. 23, written about 1300 B.C. Into the rest of North Africa they do not appear to have been introduced till the third century of our era.

SWINE.

As indicated by the expression "Boar out of the wood" (Psalm 80, 13), the forest districts of Palestine sheltered droves of wild Swine (*Sus scrofa ferus*) in Biblical times, as many of them do at the present day. In Gospel times domesticated Swine, although abhorrent to the Jews, were kept, and probably eaten, around, if not in, Palestine.

BĒHĒMÔTH.

Bĕhēmôth (Job 40, 15), the Hebrew equivalent of the Coptic *pehemaut*, meaning "Water-Ox," in many instances at any rate, undoubtedly denotes the Hippopotamus (*Hippopotamus amphibius*),

FIG. 3.



THE SYRIAN HYRAX=THE "CONEY" OF THE BIBLE.

which, although now banished to Upper Nubia, formerly inhabited the lower reaches of the Nile. There is, however, no record of the occurrence of the species in Syria or Palestine during the historical period. The term may also be applied to any large animal.

"CONEY."

Realising that the Hebrew word *shâphân* (the hider) indicated a small animal living in holes among rocks, the translators of the Bible rendered it "Coney" (Lev. 11, 5, and Psalm 104, 18), the word then in general use for the Rabbit (*Lepus cuniculus*). Since the word "Coney" has now dropped out of general use (surviving only in legal documents), it is frequently supposed to be the proper name of the animal referred to in the Bible. The *shâphân* has been

identified with the Syrian Hyrax (*Procavia*, or *Hyrax, syriaca*), Fig. 3, an animal which has nothing to do with the Rabbit, or indeed Rodents generally. On the contrary, it is a distant relative of the Rhinoceros and Elephant, having somewhat Rhinoceros-like molar teeth, and the toes terminating in broad, hoof-like nails. In Lev. 11, 5, the *sháphán* is stated to chew the cud, and since the Hyrax does not do so, the identification of the latter with the former has been questioned by Dr. H. C. Chapman (*Proc. Philadelphia Academy of Sciences*, vol. lvi., p. 479, 1904). The objection, however, is invalid, since there is no small animal with the habits of a Hyrax or Rabbit which ruminates; the idea that such animals possess this function having probably arisen from the rapid movements of their lips.

A stuffed specimen and a skull of the Syrian Hyrax are exhibited.

LION.

Although Lions (*Felis leo*), to which there are many allusions in the Bible, have been long since exterminated in Palestine, they still abound on the banks of the Euphrates between Bussora and Bagdad—where they dwell in the oak-forests, and feed largely on Wild Swine—as well as in the marshes of Babylonia. In Biblical times Lions were probably numerous throughout Palestine and Syria generally.

LEOPARD.

The Hebrew word *námér*, the equivalent of the Arabic *nim'r*, which is translated "Leopard" in the Bible (Jer. 5, 6), probably indicates two distinct kinds of animals, namely, the true Leopard (*Felis pardus*), in which the black markings on the body take the form of rosettes, and the Hunting-Leopard (*Cynaelurus jubatus*), in which they are solid spots. Leopards are still found in the Lebanon; and Hunting-Leopards are used at the present day for coursing Gazelles in Syria. Both species are known in India as *chita*, a name which, like *nim'r*, means "spotted."

CAT.

The word "Cat" occurs but once, in the Apocrypha (Baruch 6, 22), where it is believed to indicate Wild Cats, which are represented in Syria by a race of the European species (*Felis catns moreæ*). Mention is, however, made of Cats, *cathod*, in the Welsh Bible (Isa. 34, 14).

DOG. GREYHOUND. WOLF. FOX.

The Hebrew *kéleb*, translated "Dog" in the Bible, refers for the most part to the hordes of Pariah Dogs (Fig. 4) that haunt all Eastern cities, where they are useful scavengers. The Hebrew *zarzír mothnayim*, signifying "girt about the loins" (Prov. 30, 31), may be rightly translated "Greyhound," although other renderings have been suggested. If so, the Slughî, or Gazelle-Hound, of the Bedonin of

FIG. 4.



A TURKISH PARIAH DOG.

Arabia and Syria is probably the Scriptural Greyhound (Fig. 5). These Dogs are often girdled by their owners in order to prevent them from over-eating and becoming fat. The Afghan Greyhound is an allied, but more hairy, breed (Fig. 5). Wolves (*Canis lupus*) are still common in Palestine, as are Jackals (*C. aureus*) and Foxes (*Vulpes alopecurus niloticus*). The "Foxes" (Hebrew *shú'al*) of the Old Testament (Judges 15, 4) are certainly Jackals, but the use of the former word in the New Testament, as the translation of the Greek *alôpēx*, is probably correct.

BEAR.

The Syrian Bear (*Ursus arctus syriacus*), which is a grey phase of the typical Brown Bear of Europe, still inhabits the mountains of Palestine, and in Biblical times, as is evident from 2 Kings 2, 24, was doubtless distributed over the greater part of the country.

FIG. 5.



SLUGHY (A) AND AFGHAN GREYHOUND (B).

HYÆNA.

The Valley of Zeboim (1 Sam. 13, 18) is still called by Arabs Shukh-ed-Dubba=the Gorge of the Hyæna, and is thus believed to refer to the Striped Hyæna (*Hyæna striata*), which is now common throughout Syria. The Hebrew word *ḡábûa'*, which, with the word *'ayit* preceding it, is rendered (Jer. 12, 9) a "speckled bird" in the Authorised Version, may indicate the Hyæna; and the same may be the case with the "doleful creatures" (*ôlîm*) of Isa. 13, 21.

"FERRET."

"Ferret," the rendering in Lev. 11, 30, of the Hebrew *ănâqâh*, is one of the most unfortunate translations in the Bible, as the animal referred to is probably one of the group of Lizard-like Reptiles known as Geckos, such as the Fan-footed Gecko (*Ptyodactylus lobatus*) and the Common Gecko (*Tarentola mauritanica*), which frequent the walls and ceilings of houses in Palestine and Egypt. "Hedgehog" and "Toad" have also been suggested as proper renderings. Specimens of Geckos are shown.

"MOLE."

Two words are translated "Mole" in the Bible, but since there are no true Moles in Palestine, it is evident that in neither instance is the rendering correct. The first word, *tînskémeth* (Lev. 11, 30), probably indicates the Chamæleon; but the second, *hăphôr-pêrôth* or *hăphôr pêrôth* (Isa. 2, 20), seems to refer to a species of Mole-Rat allied to the *Spalax typhlus* of Eastern Europe and Egypt. These animals have somewhat the habits of Moles, but feed on roots instead of worms, and belong to the Rodent order of Mammals. The "Weasel" of Lev. 11, 29, may also be the Mole-Rat.

ELEPHANT. IVORY.

Indian Elephants (*Elephas maximus*) were first brought to Palestine by Antiochus Epiphanes, king of Syria, by whom they were employed in war. Possibly these Elephants came from Mesopotamia, as there is historical evidence that the Indian species inhabited that country in Assyrian times. On the other hand, ivory, which was supplied either by the caravans of Dedan, or brought, together with Apes and Peacocks, by the navy of Tarshish (1 Kings 10, 22), was probably the product of *Elephas africanus*. Egyptian merchants traded for ivory to Barygaza, the port to which were carried the products of India from Ozene. As to the locality of Tarshish see PEACOCK (p. 15).

WHALE. LEVIATHAN. DRAGON.

The Hebrew *tammî*, translated indifferently as "Dragon," "Sea-Monster," "Serpent," or "Whale," seems, in one instance at any rate (Lam. 4, 3), to indicate a member of the Cetacean order.

"Leviathan" also appears in one passage (Psalm 104, 26) to indicate a Whale. Jonah's Whale is rendered in the New Testament as *kētos*, the Greek term for any Whale, but in the Ethiopic Bible appears as *anbar*, the Arabic name for ambergris, and thus for the Sperm-Whale (*Physeter macrocephalus*), by which it is produced. Evidence has been adduced by Dr. Paul Haupt (*Proc. Amer. Phil. Soc.*, 1907, vol. xlv., p. 151) to show that Jonah's Whale was a Sperm-Whale.

It may be of interest to mention that the material first called amber was the perfume now termed ambergris: at a later period the name amber was transferred to the fossil resin which now goes by that designation, and the substance first termed amber was distinguished as ambergris (*i.e.* grey amber).

On the other hand, in Job 41, 1, "Leviathan" signifies the Timsa, or Nile Crocodile (*Crocodilus niloticus*), which, at least at one time, inhabited Syria as well as Egypt; and the word *tannûn*, translated "Dragon," also refers in several instances to the same reptile.

"BADGER."

The Hebrew word *taḥash*, which is translated "Badger" in Exod. 26, 14, indicates an animal of which the skin was employed for the outer roof of the tabernacle, ark, etc. It seems to be equivalent to the Arabic *tuchash*, which denotes the Porpoises, Dolphins, and Dugongs of the Red Sea. The largest of these is the Red Sea Dugong (*Halicore tabernaculi*), the skin of which was almost certainly employed for the purpose indicated.* Dugongs and Manatees (which gave rise to the fable of Mermaids) are quite distinct from Whales, Porpoises, and Dolphins, representing another order—the Sirenia—of which the few living members are herbivorous.

BAT.

The Hebrew word *ʿatallēph*, translated in the Bible usually as "Bat" (Lev. 11, 19), but in one case occurring among the list of unclean Birds, certainly indicates the former animal; the ancients regarding Bats as akin to Birds. Among the common members of the group in Palestine is the Syrian Tomb-Bat (*Taphozous nudiventris*); but an allied Egyptian species is shown in the wall-case on the left side of the bay.

EAGLE. OSPREY.

The Hebrew *nēsher* (coming from a root meaning to tear with the beak) is translated "Eagle," but seems to be the equivalent of the

* Mr. S. M. Perlmann has suggested (*Zoologist*, ser. 4, vol. xii., p. 256, 1908) that the Okapi is the animal indicated by *taḥash*.

Arabic *nissr*, the name of the Griffon Vulture (*Gyps fulvus*), and thus indicates that bird. "Vulture" would in many passages of the Old Testament suit the context much better than "Eagle"; and the same is the case with regard to *aëtos*, which in the New Testament is translated "Eagle." *Nisroch*, the Vulture-god of the Assyrian sculptures, is a deification of the Griffon Vulture.

"Osprey" may indicate not only the bird (*Pandion haliaëtus*) properly so called, but likewise others of the smaller members of the Eagle group, such as the Short-toed Eagle (*Circus gallicus*), which is not uncommon in Palestine.

VULTURE. KITE. GLEDE. HAWK.

Dayyâh and *ayyâh* are both translated in some cases as "Vulture," although the former is the equivalent of *h'dayah*, the Arabic name of the Black Kite (*Milvus ater* or *M. korschun*), while the latter probably indicates the typical or Red Kite (*M. iclinus*), and is in certain instances thus rendered in the Bible. "Glede" (Deut. 14, 13), an old name for the Kite, is the translation of the Hebrew *rââh*, which may indicate the Buzzard (*Buteo vulgaris*). "Hawk" (Job 39, 26), the translation of the Hebrew *nêç*, probably indicates several of the smaller Birds-of-prey, such as the Kestrel (*Falco* [or *Cerchneis*] *tinnunculus*), Hobby (*F. subbuteo*), etc.

"GIER-EAGLE."

This translation of the Hebrew *râhâm* (Lev. 11, 18) really indicates the black and white Egyptian Scavenger-Vulture, or "Pharaoh's Hen" (*Neophron percnopterus*), which is common throughout the East, where it is of great value in sanitation. Its Arabic title is *racham* or *rachma*.

"NIGHT-HAWK." OWL.

In rendering the Hebrew *tuhmâs* as "Night-Hawk" (Lev. 11, 16) the translators probably had in mind the Night-jar (*Caprimulgus europæus*), but the word apparently signifies a Bird-of-prey, and may be intended for the Barn Owl (*Strix flammea*), or some other kind of Owl. "Owl," or "Little Owl" (Lev. 11, 17), is probably the correct translation of *kôs*, and may refer to the species known as the Southern Little Owl (*Athene glaux*). *Qippôz*, rendered the "Great

Owl" (Isa. 34, 15), indicates another member of the group that cannot be definitely identified. On the other hand, *yanshûph*, which is also rendered "Owl" (Isa. 34, 11), apparently indicates the Sacred Ibis (*Ibis religiosa*). In certain passages "Owl" appears to stand for Ostrich (*q.v.*).

PELICAN. CORMORANT.

The Hebrew word *qááth*, coming from a root meaning to vomit or disgorge, is rightly translated "Pelican" (Psalm 102, 6), the name referring to the manner in which those birds feed their young by disgorging fish. Two species, *Pelecanus onocrotalus* and *P. crispus*, occur in Syria, the latter distinguished by curled feathers on the head. In the expression, "Pelican of the wilderness," the final word refers to any kind of uninhabited place, just as in India "jungle" may denote a desert. *Shálákh* is also translated "Cormorant" (Lev. 11, 17), as is likewise *qááth* (Isa. 34, 11; Zeph. 2, 14); in the former instance the rendering may be correct. Two species of Cormorants, *Phalacrocorax carbo* and *P. desmaresti*, are found in the Mediterranean.

STORK.

The Stork (*Ciconia alba*), mentioned in Jer. 8, 7, is undoubtedly the bird denoted by the Hebrew *hšsîlâh*, which means "the kind one." Storks abound during summer in all Eastern cities, where they nest on the houses, and are protected by the inhabitants on account of their value as scavengers. The Black Stork (*C. nigra*), which is also a native of Palestine, does not frequent human dwellings.

BITTERN. HERON.

The Hebrew *qîppôd*, which occurs in several passages, and is translated "Bittern" (Isa. 14, 23), probably indicates that bird (*Botaurus stellaris*), which haunts marshy situations, such as may occur in the neighbourhood of ruins, and utters a loud booming cry. Whether the "Heron" of the Bible (Lev. 11, 19), the translation of the Hebrew *ânâphâh*, really indicates one or more of the members of the family *Ardeidæ*, is doubtful.

PEACOCK.

The word rendered "Peacock" in 1 Kings 10, 22, is *tukkî*, which it has been suggested is equivalent to *togeï*, or *tokeï*, the Tamil name

of that bird. Peacocks (*Pavo cristatus*) are mentioned as having been brought to Syria from Tarshish together with apes and ivory; whence it has been assumed that Tarshish was either in India or Ceylon. It, may, however, have been a port on the east coast of Africa to which Indian products were carried. It has also been suggested by Dr. P. Haupt, in the article cited on p. 12, that Tarshish indicates the Cinnabar Mines of Spain. The "Apes" cannot be identified.

"SWAN."

The rendering of the Hebrew *tinshémeth* as "Swan" in Lev. 11, 18, is almost certainly wrong; and it has been suggested that the bird indicated by that word is really the Purple Waterhen (*Porphyrio cæruleus*), which is a common species in the Mediterranean countries. The Hebrew word almost certainly denotes a Water-Bird; and in the Septuagint it is translated *Porphuriōn*, but in another version *Ibis*.

OSTRICH.

Although for the most part otherwise translated, there is little doubt that the Hebrew words *bath-hayya'ânâh*, *yâ'ên*, and *rě'nânîm* (?) indicate the Ostrich (*Struthio camelus*), the range of which extends from Barbary to Syria, Arabia, and even Mesopotamia, although it does not now include Egypt. The Ostrich is mentioned in Lam. 4, 3; but the Ostrich of Job 39, 13, is the rendering of the Hebrew *uôçâh* (i.e. feathers).

PARTRIDGE. QUAIL.

Two kinds of Partridge, the red-legged Chukar Partridge (*Caccabis chukar*) and Hey's Sisi Partridge (*Ammoperdix heyi*), abound in Syria, and both may be indicated by the Hebrew *qôrê*, which signifies "the caller," and is translated "Partridge" (Jer. 17, 11; 1 Sam. 26, 20). This word, like the Hindustani *chukar*, is derived from the bird's note.

Sělâw, the Hebrew equivalent of *salwâ*, the Arabic name of the Quail (*Coturnix communis*), is rightly taken to indicate that bird.

TURTLE. TURTLE-DOVE. DOVE.

The Hebrew name *tôr*, like the English "Turtle," is derived from the coo of the Turtle-Dove (*Turtur communis*), a species that, together with the Palm-Dove (*T. senegalensis*), visits Palestine in

large flocks every summer. The word is rightly translated "Turtle-Dove" in Gen. 15, 9, and Lev. 1, 14.

The "Dove" of Scripture (Isa. 38, 14), the rendering of the Hebrew *yônâh*, is the Rock-Dove, or Blue Rock-Pigeon (*Columba livia*), the parent-stock of the numerous domesticated breeds of Pigeons.

CRANE. SWALLOW.

In the two passages, "Like a Crane or a Swallow, so did I chatter" (Isa. 38, 14), and "The Crane and the Swallow observe the time of their coming" (Jer. 8, 7), the translators have practically identified the two species intended, but have rendered *sûs* or *sîs*, which properly indicates the Swift (*Cypselus apus*), and is equivalent to the Arabic *sûs*, as "Crane," while *âgûr*, which really means the Crane, is translated "Swallow."

The word *dêrôr* is probably rightly translated "Swallow" (*Hirundo rustica*), although it may also include other birds of rapid flight.

"LAPWING."

The Hebrew *dûkîphath*, rendered "Lapwing" in the Authorised Version (Lev. 11, 19), probably indicates the Hoopoe (*Upupa epops*), as it is very similar to the Coptic and Syriac names of that bird, which abounds in Palestine.

SPARROW.

In our version the Hebrew *çippôr*, signifying to chirp or twitter, and the Greek *strouthion* are rendered "Sparrow," and may refer to any of the smaller perching birds, many of which are now, as formerly, used for food in Syria. The "Sparrow alone upon the house top," referred to in Psalm 102, 7, is, however, very probably the Blue Rock-Thrush (*Monticola cyanus*), which is habitually a solitary species.

RAVEN.

The Hebrew *ôrêbh* must be taken in a wide sense, so as to include not only the Raven (*Corvus corax*), but likewise the Crow (*C. corone*), Rook (*C. frugilegus*), and other members of the same group. The Raven of Prov. 30, 17, is the correct rendering of *ôrêbh*; but it has been suggested that the Ravens, *ôrêbhîm*, that fed Elijah (1 Kings 17, 6) were the people of Orbo, a small town near the Cherith Valley.

CHAMÆLEON. LIZARD.

The translation of the Hebrew *kôah* as "Chameleon" in Lev. 11, 30, appears incorrect; and it has been suggested that one of the large Lizards known as "Monitors," such as the Egyptian *Varanus niloticus* or *V. griseus*, is the animal referred to. On the other hand, the word *tinshémeth*, in the same passage, which is translated "Mole," may indicate the Chamæleon (*see* MOLE, p. 11). The reason

FIG. 6.



THE CHAMÆLEON.

(From "The Cambridge Natural History.")

for the latter opinion is that *tinshémeth* comes from a root meaning to breathe, thus suggesting the Chamæleon, which was believed to live by swallowing air. "Lizard," the translation of the Hebrew *lēṭāāh*, cannot be identified with any particular species, although it doubtless indicates Lizard-like Reptiles.

"TORTOISE."

The Hebrew word *ṣāb*, translated "Tortoise" in the Authorised Version (Lev. 11, 29), but amended to "Great Lizard" in the Revised

Version, which occurs only in Lev. 11, 29, appears to be the equivalent of *dab*, the Arabic name of the Spiny-tailed Lizards of the genus *Uromastix*. These Lizards, of which *U. spinipes* is the typical species, grow to a length of about 2 feet, and are common in the desert districts of Syria, Arabia, and N. Africa, as well as India, where they live in holes. They take their name from the rings of stout spines girdling the tail.

SNAIL.

Of two words rendered "Snail" in our Bible, the translation is probably correct in the case of *shablûl* (Psalm 58, 8); the slimy track of Snails probably giving rise to the idea that the body is wasting. *Hômet* (Lev. 11, 30), on the other hand, which appears related to the Arabic *chometau* (*i.e.* sand), may indicate desert Lizards of the Skink group, such as *Scincus officinalis*.

SERPENT. ASP. ADDER. COCKATRICE.

The ancient Hebrews were probably acquainted with about half-a-dozen kinds of poisonous Serpents, for which they had several names. *Péthou*, rendered "Asp" (Isa. 11, 8), was a species used by snake-charmers, and probably therefore the Egyptian Cobra (*Naia haie*), which ranges into Syria. "Adder" (Psalm 58, 4), or sometimes "Cockatrice" (Isa. 11, 8), stands for any Snake of the Viper group, and is used for several Hebrew words. Of these, *shēphîphôn* probably indicates either Cleopatra's Asp (*Cerastes vipera*) or the Horned Viper (*C. cornutus*), while *'akhshûbh* may be the Sand-Viper (*Echis carinatus*). "Fiery flying serpent" (Isa. 14, 29) is apparently a mythical expression; but the "fiery serpent" (Numb. 21, 6) may possibly have been the very large Guinea-worm (*Draunculus medinensis*).

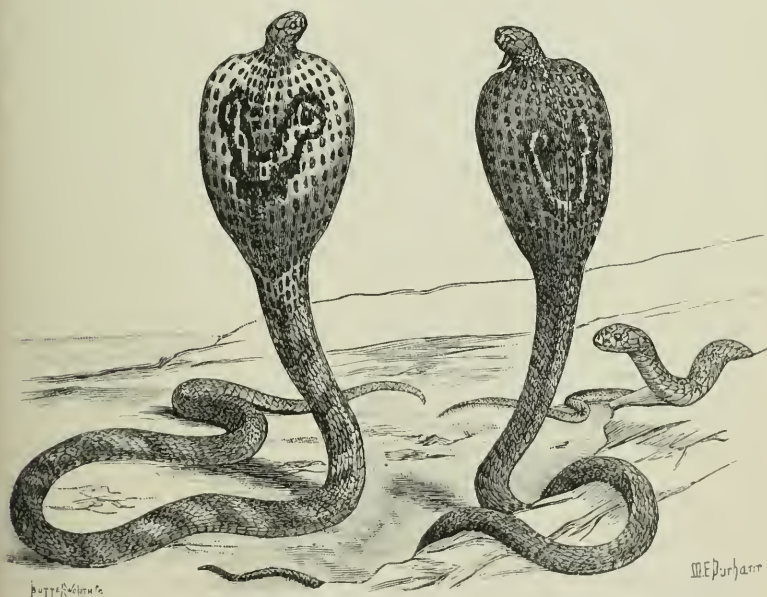
FROG.

The word "Frog," which is at least an approximately correct translation, occurs several times in the Old (*e.g.*, Exod. 8, 2) and once in the New Testament (Rev. 16, 13). Tristram stated that the only species inhabiting Egypt is the Edible Frog (*Rana esculenta*) of Europe, Asia, and North Africa; but that species is rare in Egypt, where the ordinary Frog is *Rana mascariensis* of Africa. This may have been the Frog of the Plagues: but there is a possibility that Toads constituted the visitation, some support to this being afforded by the fact that *Bufo regularis* makes its appearance in Egypt at certain seasons, or after rain, in numbers.

BEE. HONEY. HORNET.

Palestine, like India, abounds with Bees of various kinds, which often dwell in immense swarms, and are thus dangerous to travellers. The Palestine Honey-Bee (*Apis fasciata*) is nearly allied to the European species. In Hebrew the Bee is called *dēbōrāh* and honey *debash*; the latter word also indicating a decoction of grape-juice. The translation of the Hebrew *qir'āh* as "Hornet" is correct.

FIG. 7.



THE INDIAN COBRA, A SPECIES ALLIED TO THE AFRICAN COBRA.
(From "The Cambridge Natural History.")

LOCUST. GRASSHOPPER. CANKERWORM.
CATERPILLAR. BEETLE.

Several Hebrew words are rendered "Locust" and "Grasshopper" (Lev. 11, 22) in the Bible; but it is probable that *arbeh*, the Locust of the Plagues (Exod. 10, 4-6), indicates the North African Locust (*Acridium peregrinum*), which, like the Migratory Locust (*Pachytylus cinerascens*), ranges into Palestine. *Yéleq* and *hāsîl*, both of which

appear to mean "the lick-up," and are translated indifferently "Caterpillar" (Psalm 78, 46) and "Cankerworm" (Joel 1, 4), probably indicate the immature, non-flying stages of the Locust, the "voetgangers" of the Dutch in South Africa. "Beetle" (Lev. 11, 22) apparently also indicates some kind or phase of Locust; it is the rendering of the Hebrew *hargól*; the same is the case with "Bald Locust" (Lev. 11, 22). See also WORM.

WORM. MOTH. PALMER-WORM.

"Worm" occurs in many passages (*e.g.*, Isa. 51, 8) as the translation of the Hebrew *sás*, *rimmáh*, and *tólé'áh*. Of these, *sás*, which is found in Isaiah, denotes the larva of a species of Clothes-Moth (*Tinea pellionella*), characterised by eating cloth in such a manner as to make it appear worn; and the same is the case with *'áh*, rightly translated "Moth." *Rimmáh* and *tólé'áh* denote Caterpillars and Grubs of various Insects, and less commonly Earth-Worms. The reference in Jonah 4, 7, to a gourd being withered by the attack of a worm (*tólé'áh*) suggests the larva of a large Beetle or Moth. The passage in Job 27, 18, "He buildeth his house as a moth, and as a booth that the keeper maketh," probably refers to the large rough larval case of small twigs made by the bigger Psychid Moths. The Greek *skōlēx*, in the New Testament, translated "Worm," is equivalent to *tólé'áh*. "Palmer-Worm" (Joel 1, 4), the rendering of the Hebrew *gázám*, is almost certainly a Caterpillar, but may also include one or more of the immature stages of the Locust (*see* CANKERWORM).

SCORPION. SPIDER. ANT.

Several kinds of Scorpion are common in Palestine, especially in the deserts, and the word *'agráb* is no doubt rightly translated (Deut. 8, 15) in this sense. Two words, *'akkábish* (Isa. 59, 5) and *sēmámíth* (Pr. 30, 28), are rendered "Spider"; and in the case of the first, at any rate, the translation is correct. The second word may, however, indicate a Gecko, although it has been suggested that the movements of a running Spider may justify the application of the term "hands" to its limbs. "Ant," the rendering of the Hebrew *uḥmáláh*, occurs twice in Proverbs (6, 6-8; 30, 25), and is no doubt rightly rendered. Numerous kinds of Ants, some of the genus *Formica* and others of *Myrmica*, inhabit Palestine, and differ from those of northern countries in their habit of storing up grain in the time of harvest.

FLIES. FLEAS. LICE.

Zēbāb and *‘ārōb* are both translated “Fly” or “Flies” (Exod. 8, 21–32; Psalm 78, 45; Eccles. 10, 1), the former, which is the equivalent of the Arabic *athebāb*, apparently signifying some kind of biting Fly, such as a Horse, or Gad, Fly (*Tabanus*), although in some instances used in a more general sense. The serious torment that Flies constitute in the East is testified by the cult of the Phœnician idol Baalzebub, the Lord of Flies. *‘Ārōb*, which is the term employed for the Flies of the Plagues, indicates the House-Fly (*Musca domestica*). “Flea” is mentioned twice in 1 Samuel (24, 14; 26, 20), and, like “Lice,” the rendering of *kinnīm* (Exod. 8, 16), is correctly translated. Lice are common among the desert Bedouin, but would be repugnant to the cleanly Egyptians of Biblical times.

HORSE-LEECH.

The word “Horseleach” occurs in Prov. 30, 15, as the translation of the Hebrew *‘ālūgāh*, which is the equivalent of the Arabic *‘alaq*, the name of the Horse-Leech (*Hæmopsis sanguisuga*), and perhaps of other kinds of blood-sucking Leeches. The expression “two daughters” is generally considered to be figurative, and to refer to the blood-sucking habits of Leeches. The ordinary Medicinal Leech represents another genus, *Hirudo*. A specimen of the Horse-Leech is exhibited.

PURPLE DYE.

“Purple” was a colour held in high estimation among the ancients, and was obtained by using as a dye the secretion of certain Whelk-like Molluscs of the genera *Purpura* and *Murex*; the former of which takes its name from producing this dye. The dye, which is the product of a gland situated near the gills, is yellowish when first extracted, and turns purple only when exposed to sunlight. The dye was in use in Minorca at least till 1858; but even in early times became very scarce. The species most used as a source of supply was *Murex trunculus*, of which a shell, together with one of *M. brandaris*—a species also used as a source of the dye—is shown in the case. The ancient “purple” was probably more the colour of the flower of the Crown Imperial, or Giant Fritillary.

PEARLS*.

Pearls are referred to in Job 28, 18 ; “ No mention shall be made of coral, or of pearls.” In this passage the word is the translation of the Hebrew *gâbîsh*, meaning ice, and the reference would therefore seem to be to rock-crystal. On the other hand, the *margaritai* of the New Testament (*e.g.*, Matt. 13, 45) are undoubtedly true Pearls, which are largely the product of the Pearl-Oyster (*Margaritifera margaritifera*), and are secreted by those Molluscs around the larvæ of parasitic worms. A moderately large kind of Pearl-Oyster (*M. m. erythrææ*), of which a specimen is exhibited, occurs in the Red Sea, and a rather smaller kind (*M. m. persica*) in the Persian Gulf ; and it was doubtless from one or both of these that Palestine obtained its pearls. The small Lingah Pearl-Oyster (*M. vulgaris*), of the Persian Gulf, is fished only for its shell.

CORAL†. SPONGE.

Coral, Hebrew *râmôth* (meaning that which grows tall, or is tree-like), is mentioned in Job 28, 18, and in Ezek. 27, 16. The Coral of Scripture, which was brought to Tyre either from the Red Sea or the Persian Gulf, was probably the precious Red Coral (*Corallium rubrum*), of which a specimen preserved in spirit, so as to show the Polyps, is exhibited. Coral was broken off from submarine rocks and drawn up to the surface by cords ; and it has been stated that in the passage in Job, the words “ the price of wisdom ” might be better rendered “ the drawing up of wisdom,” and thus refer to the coral-fishery. Coral of all kinds is the calcareous skeleton-like secretion of Polyps near akin to Sea-Anemones.

Sponge, of which several kinds are abundant in the Mediterranean, is mentioned only in the New Testament (*e.g.*, Matt. 27, 48), as the translation of the Greek *spongos*.

MANNA.

An Insect of the genus *Coccus*, nearly allied to the Cochineal Insect (*C. cacti*), infests the leaves of Tamarisk (*Tamarix mannifera*) on Sinai, piercing them with its proboscis, and thereby causing an exudation of a sweet gummy secretion. This hardens and drops from the boughs, when it is collected by the natives, who regard it as the Manna of the Israelites (Exod. 16, 15), although, as mentioned on p. 41, this has a quite different source.

* See also p. 71.

† See also p. 70.

II.—PLANTS.

It has been estimated that 120 plants are mentioned in the Bible, but, as in the case of the animals, it is often difficult or impossible to associate the Hebrew name with a specific plant. It must also be remembered that botany as a science was in a very crude state at the date of the preparation of the Authorised Version, and the rendering adopted is often misleading from the point of view of modern terminology. In some instances the translators have not attempted to find an English equivalent for the Hebrew, as in the case of the timber of which Noah built the ark, where *gopher* is simply a transliteration of the Hebrew word. In many cases they have used English words that a knowledge of the flora of Palestine shows to be inappropriate (*see*, for instance, under APPLE, CHESTNUT, ROSE), and in others the same name does duty for more than one plant; oak, for instance, includes the terebinth. Some words are of a very general application, such as those indicating spiny or thorny plants, which are a characteristic feature of the drier, hotter parts of Palestine and the desert countries adjoining; or the term "bitter herbs," in reference to which Canon Tristram remarks: "There are not many of the *Cruciferae* or *Compositae* families of plants which Orientals do not employ for their varied bitter salads."

In the present exhibition a certain general arrangement has been followed. The front end of the case is occupied with specimens of useful woods so far as these can be identified. Following round to the right are trees and shrubs, finishing with the vine in the back end of the case. The left side deals with herbs, mainly food-plants—very few flowers are mentioned in the Bible—with the plants from which perfumes were derived, and finally a few of the characteristic thorns and thistles.

WOODS.

BOX-WOOD.

In the passage in Ezekiel (27, 6), "The company of the Ashurites have made thy benches of ivory," the word rendered "Ashurites" should probably be translated "Box-wood," and the passage should

read, "The benches of the rowers have they made of box-wood inlaid with ivory."

The Box-tree of Palestine, *Buxus longifolia*, is closely allied to *B. sempervirens*, the species native and commonly grown in England, a specimen of the wood of which is shown here. It is hard, close-grained, and remarkably homogeneous and durable.

OLIVE-WOOD. *See* OLIVE.

GOPHER-WOOD.

The Hebrew *gopher*, which occurs once only (Gen. 6, 14, "Make thee an ark of gopher-wood"), has been variously explained. Perhaps the most probable interpretation is that it is the same as *copher*, the Cypress (*Cupressus sempervirens*), a tree that grows in great abundance in Chaldea and Armenia, and from its toughness and close texture is well adapted for ship-building.

ALMUG or ALGUM TREE.

Almug or Algum trees were imported from Ophir (probably India) by Hiram of Tyre for Solomon, who used the wood for pillars in the Temple and the king's house and for musical instruments (1 Kings 10, 12). It was evidently a very precious wood, and must have been hard and close-grained. It has been identified with the Red Sandal-wood, or Sanders-wood, of India, which is very heavy, fine-grained, and of a brilliant red colour, and is still used in the East for making musical instruments.

The plant referred to has been identified also with the well-known Sandal-wood (*Santalum album*) of India, a very hard, close-grained, fragrant wood, used for carving and cabinet work.

Specimens of both of these woods are shown.

EBONY.

Ebony (Hebrew, *hobnîm*) is mentioned by Ezekiel (27, 15) as a precious article brought to Tyre by the merchants of Dedan—the inhabitants of the Persian Gulf. It is the heart-wood of a tree, *Diospyros Ebenum*, a native of Southern India and Ceylon; the outer wood is white and valueless.

CEDAR-WOOD. *See CEDAR.*

A small specimen of the wood and bark in cross-section is shown ; also a fragment of a Cedar beam brought from the palace at ancient Nineveh by Layard, the Assyrian explorer.

THYINE WOOD.

Thyine wood, mentioned in Rev. 18, 12, is the wood of a small tree (*Callitris quadrivalvis*), of very slow growth, allied to the Cypress, and a native of the Atlas Mountains in North Africa. The wood, which is dark brown in colour, very heavy, close-grained, and fragrant, was much prized in the days of the Roman Empire for inlaid work, and is still used for a similar purpose in Algeria at the present day.

SHITTIM WOOD. *See SHITTAH TREE.*

TREES AND SHRUBS.

ALMOND.

The Almond (*Amygdalus communis*) is frequently mentioned in the Bible, and is one of the native fruits of Palestine. Its flowers appear before the leaves, and it is the earliest of all the trees to put forth blossom, whence its Hebrew name *shâqêd*, hasten. (Compare the play on the word in Jer. 1, 11, 12.) Aaron's rod that budded (Numb. 17, 8) yielded almonds, and almonds were among the presents taken down to Egypt by Jacob's sons. The fruit was the model for the ornaments of the candlesticks in the tabernacle. The word *lûz*, translated "Hazel" in Gen. 30, 37, is supposed to refer to the Almond.

APPLE.

The Hebrew *tappûah*, translated "Apple," occurs in the Song of Solomon (2, 3 and 5 ; 7, 8 ; 8, 5), also in Prov. 25, 11—"A word fitly spoken is like apples of gold in pictures of silver"—and elsewhere. This does not refer to our Apple, which is not native, nor does it thrive under cultivation in Palestine. The Quince and Citron have been suggested among others as the fruit indicated, but from the passages in which the tree is mentioned it is evident that it must

have supplied a grateful shade, and that the fruit must have been sweet to the taste and beautiful to see. Canon Tristram suggests the Apricot (*Armeniaca vulgaris*) as the only likely fruit that combines those characters. Though not a native of Palestine, the Apricot was early introduced from Armenia, and is now common everywhere.

BAY.

The Hebrew *ezráh* is once translated "Bay-tree" (Ps. 37, 35), and the Psalmist may possibly have intended the Sweet Bay (*Laurus nobilis*), a native of Palestine and a plant well known in our shrubberies. As the word is elsewhere translated "native," as opposed to a stranger or foreigner, it has been suggested that the term applies merely to a tree grown in its native soil, and not to any particular tree.

CHESTNUT-TREE.

The Hebrew *'armôn*, which occurs twice in the Old Testament (Gen. 30, 37; Ezek. 31, 8), is translated "Chestnut-tree" in the Authorised Version, but the Chestnut is not a native of Palestine. The Revised Version, following the Septuagint, is probably correct in its rendering "Plane-tree" (*Platanus orientalis*), which is frequent by the sides of streams. This tree is well known as planted in parks and open spaces in England.

BOX.

The Box-tree is mentioned by Isaiah (41, 19, and 60, 13) as associated with the Fir-tree and the Pine. The native Box-tree of Palestine is *Buxus longifolia*, a small evergreen tree about 20 feet high, slightly differing from the species commonly grown in England. A piece of the wood is shown in the front end of the case.

CEDAR.

The Hebrew *érez* is applied in the Bible generally to trees of the Pine family, but more frequently to the Cedar of Lebanon (*Cedrus libani*), which forms extensive forests on the Mountains of Lebanon, and is also plentiful on the Taurus range. The tree is from 50 to 80 feet in height, with numerous large horizontal branches, and is quoted as a type of grandeur and lofty stature. The wood was largely used by Solomon in the erection of the Temple and of his

own palace. Specimens of the wood are shown in the front end of the case. The Cedar-wood mentioned in Lev. 14, 4, and Numb. 19, 6, was probably derived from a fragrant species of Juniper.

FIG.

The Fig (*Ficus Carica*) is the first known tree mentioned in the Bible (Gen. 3, 7), and there are frequent references to the tree and its fruit both in the Old and New Testaments. It is a native of Palestine, and is also generally cultivated there; the land was described as "a land of wheat, and barley, and vines, and fig trees, and pomegranates" (Deut. 8, 8). It reaches a considerable size, the stem being often 3 feet thick; the wide-spreading branches bear a dense foliage of large tough palmate leaves, affording a grateful shade: "they shall sit every man under his vine and under his fig tree" (Micah 4, 4). The fruits, especially when dried, form an important article of everyday food; when dried they were pressed into cakes (Hebrew, *dēbēlāh*) (see 1 Sam. 25, 18; 30, 12).

The first ripe figs (Hebrew *bikkūrāh*) appeared in spring before the leaves expanded; the green or unripe figs were called in Aramaic *paggā*, a word found in Bethphage, literally "the house of unripe figs."

FIR-TREE.

The Hebrew *bērōsh* and *bērōth*, generally translated "Fir tree" in our version, refer probably to the Aleppo Pine (*Pinus halepensis*), a native of the mountainous parts of Palestine, and common on the Lebanon range. It is associated with cedars in respect of its noble growth (Ezek. 31, 8; Isa. 37, 24). The Fir-tree as well as the Cedar was supplied by Hiram from Lebanon for the building of Solomon's Temple. It was also used for rafters (Cant. 1, 17), for the decks of ships (Ezek. 27, 5), and for musical instruments (2 Sam. 6, 5). The tree has been very largely destroyed for fuel or timber. Some commentators believe that the tree alluded to is the Cypress (*Cupressus sempervirens*), which is extensively planted in the neighbourhood of towns, but apparently is not wild in Palestine. The Hebrew *tirzāh*, translated in our version "Cypress" (Isa. 44, 14), refers to some hard-grained wood, and may or may not be Cypress. In the Septuagint and Vulgate it is translated as equivalent to "Oak," and others render it "Holly."

The Gopher-wood from which Noah built the ark (Gen. 6, 14)

has been regarded as identical with *copher*, the Cypress, which, from its tough and close-grained wood, is well adapted for ship-building, and is abundant in Armenia (*see* GOPHER-WOOD).

HEATH.

The Hebrew 'ar'âr, 'ârô'êr, the Heath of the desert or wilderness (Jer. 17, 6 ; 48, 6), is a dwarf Juniper (*Juniperus macrocarpa*), closely allied to the Savin, which grows in the most barren and rocky parts of the desert. It bears dark purple berries. A branch of the plant is shown.

JUNIPER.

The Hebrew *rôthem*, translated "Juniper" in several passages, is the same as the Arabic *retem*, and refers, not to a Juniper, but to a species of Broom (*Betula rœtam*). It is a desert shrub, very common in the ravines, growing to a height of 10 or 12 feet, and affording a grateful shade (1 Kings 19, 4, 5). It is described as the largest and most conspicuous of all the plants of the desert. The thick roots are converted into charcoal by the Arabs ; this explains the reference (Psalm 120, 4) to "coals of juniper." Job (30, 4) speaks of outcasts from Edom using Juniper roots as food in their extremity. Rithmah, one of the camps of the Israelites in the wilderness, implies "the place of *rôthem*." Specimens of branches in flower and fruit are shown.

LOCUST-TREE.

The "husks that the swine did eat," referred to in the parable of the Prodigal Son (Luke 15, 16), were the bean-like fruits of the Locust or Carob tree (*Ceratonia Siliqua*). The tree is very common in Palestine, and forms with its dense deep green foliage a conspicuous and attractive object. It blossoms at the end of February, and pods are produced in great quantity in April and May ; the Greek name (*keratia*, little horns) refers to their horn-like shape. The pods are chiefly used for feeding cattle and horses.

MULBERRY-TREE.

The Hebrew *běkâim* is thus translated in 2 Sam. 5, 23, 24. It probably refers to a species of Poplar (*Populus euphratica*) resembling the Aspen, and the characteristic trembling of the leaves is probably alluded to in the expression, "the sound of a going in

the tops of the mulberry-trees." The true Mulberry (*Morus nigra*) is mentioned in the New Testament under the name of "Sycamine" (Luke 17, 6), which see (p. 32).

MYRTLE.

The Myrtle (*Myrtus communis*), several times mentioned in the Old Testament, is an abundant plant in the south of Europe, and common on hillsides in Palestine. It no longer grows on the Mount of Olives, where its occurrence is mentioned by Nehemiah (8, 15) after the return from Babylon. It is always referred to as a favourite tree, thus: "Instead of the brier shall come up the myrtle tree" (Isa. 55, 13); "I will plant in the wilderness the cedar . . . and the myrtle" (Isa. 41, 19). The Hebrew is *hūdas*, from which is formed the name Hadassah, the Hebrew form of Esther.

OAK.

Six Hebrew words from the same root are rendered "Oak" in the Authorised Version. One of these, *ēlāh*, is properly the Terebinth or Teil tree (which see). The other five names, *ēl*, *ēlōn*, *ilān*, *allāh*, *allōn*, appear to be interchangeable; Tristram suggests that *allōn* stands for the evergreen Oak, and *ēlōn* for the deciduous sorts. The most common Oak in Palestine is an evergreen species, *Quercus pseudococcifera*, resembling in general appearance the Holm Oak (*Q. Illex*). To this species belongs the so-called Abraham's Oak near Hebron, which has for several centuries taken the place of the famous terebinth that marked the site of Mamre (Gen. 18, 1). It is described as the noblest tree in southern Palestine, with a trunk 23 feet in girth, and a spreading crown covering an area 93 feet in diameter.

A picture of this oak is shown, also some acorns from it.

The Valonian Oak (*Q. Ægilops*) is deciduous, and very like our common Oak in appearance. The large acorns, which are eaten by the Arabs, are borne in very large cups densely covered with long recurving teeth. The cups are rich in tannic acid, and extensively used by tanners. *Q. Ægilops* is common in Galilee, and is also abundant across the Jordan in Bashan, where it grows to a magnificent size, and is no doubt the Oak of Bashan (Isa. 2, 13; Zech. 11, 2).

A third species, the Gall Oak (*Q. insectifera*), is a deciduous tree from 20 to 30 feet high, with leaves very white on the under face.

It is less common than the other two species, but is seen occasionally in Samaria, Galilee, and on the Lebanon range.

OLIVE.

The Olive (*Olea europæa*) is the characteristic tree of Palestine. The Promised Land was a land of olive trees, oliveyards, and oil olive (Deut. 6, 11; 8, 8; Joshua 24, 13). The tree figures prominently in the first recorded parable (Judges 9, 8), where it is invited to be king over the trees. It was used by the Prophets as a type of beauty and luxuriance (Jer. 11, 16; Hosea 14, 6). The Olives in the Garden of Gethsemane on the Mount of Olives are among the oldest in the country, and tradition takes them back to the time of Christ.

The tree grows to a height of about 20 feet, and is evergreen, with narrow bluish-green leaves, and bears numerous clusters of small whitish fragrant flowers, a large number of which fall in the spring, frequently covering the ground with a white carpet (*cf.* Job 15, 33). The fruit, which is produced in great abundance, is like a small plum, violet in colour when ripe; the fleshy layers contain the oil, to which reference is made as an article of food (2 Chron. 2, 10), as an unguent (Psalm 23, 5; Matt. 6, 17), and for burning (Exod. 27, 20; Matt. 25, 3). The wood is yellowish, hard, and fine-grained, and suitable for cabinet work. The fruits are gathered by beating and shaking the branches (Deut. 24, 20; Isa. 17, 6).

The Olive requires to be grafted, the fruit developed from seedlings or suckers being small and worthless; hence the contrast between the wild and good Olive (Rom. 11, 17-24).

OIL-TREE.

The Hebrew 'êṣ *shémén*, translated "Oil-tree" (Isa. 41, 19), is probably the Oleaster (*Eleagnus angustifolia*), a small tree resembling the Olive in general appearance, with narrow bluish leaves, silvery white beneath, small white fragrant flowers, and a very bitter green berry which yields an inferior oil. It has a fine hard wood, from which the two cherubim in Solomon's Temple were made (1 Kings 6, 23, where the rendering is erroneously "olive-tree"). In Neh. 8, 15, the same word is translated "pine-branches." The tree is abundant in every part of Palestine above the Jordan Valley.

PALM.

The Palm of Scripture is the Date-Palm (*Phoenix dactylifera*); Heb., *tâmâr*; Gr., *phoinîx*. Its intimate association with Palestine is indicated in the name Phœnicia, by which the country was known to the Greeks and Romans. It was doubtless formerly more common than at the present time, and it is probable that in ancient times the whole valley of the Jordan was stocked with Palms. Jericho was the city of Palm-trees (Deut. 34, 3), and the Palm-Gardens of Jericho were famous in the time of the Herods; but owing to neglect the trees have been completely replaced by thorn and other wild trees. The Palm was also plentiful on the Mount of Olives (Neh. 8, 15), but no longer exists there. The Palm "branches" referred to (John 12, 13) are the huge leaves that crown the tall pillar-like stem. From its grace and beauty the tree was often taken as a woman's name, *Tamar* (Gen. 38, 6; 2 Sam. 13, 1; 14, 27), and was a favourite ornament in architecture, as, *e.g.*, in Solomon's temple (2 Chron. 3, 5; 1 Kings 6, 29-35). The fruits are produced in huge clusters, and are an important food, but there is no undisputed reference to them in the Bible, though in Cant. 7, 7, "Thy stature is like to a palm-tree, and thy breasts to clusters of grapes," "dates" has been suggested as a preferable reading for "grapes."

POMEGRANATE.

The Pomegranate (*Punica Granatum*) is a small evergreen tree or large shrub widely cultivated for its fruit in warm countries, especially in those bordering on the Mediterranean Sea. Reference to its cultivation in Egypt occurs in Numb. 20, 5, and the Promised Land was described as one of "vines, and fig trees, and pomegranates" (Deut. 8, 8; Numb. 13, 23). Its Hebrew name, *rîmmôn*, was given to several towns and villages in Palestine. The fruit and the flower supplied models for ornamental carving, as on the capitals of the pillars in the Temple, and for embroidery, as on the High Priest's robe.

POPLAR.

The Hebrew *libneh* (white) occurs twice in the Old Testament, and is translated "Poplar" (Gen. 30, 37; Hosea 4, 13). The reference may be to the White Poplar (*Populus alba*), which is

common in damp places, the white down that covers the under face of the leaves justifying the application of the name.

It has also been suggested that the reference is to the Storax-tree (*Styrax officinalis*), which grows abundantly on the lower hills of Palestine and in Armenia, and has white flowers resembling those of the Orange, and pale leaves with a white down on the under face. It yields a gum, which is probably the *Stacte* referred to in Exod. 30, 34, as one of the ingredients of the holy incense; but the plants are shrubs or small trees, and hardly conform to the reference in Hosea as one of the trees under which idolatrous Israel sacrificed. The Mulberry (which see) referred to in 2 Sam. 5, 23, 24, was probably a species of Poplar, *Populus euphratica*.

SYCAMINE.

The Greek *sukaminos*, translated "Sycamine tree" (Luke 17, 6), is the Black Mulberry (*Morus nigra*), which is still known in Greece as *sukaminea*. Both White and Black Mulberry trees are common in Palestine, where they are cultivated for the leaves, which are used as food for silk-worms, and also for the fruit. The Mulberry-tree (*q.v.*) of Scripture was probably a Poplar.

SYCAMORE.

The Sycamore (Heb., *shikmím*, *shikmóth*; Gr., *sukomorea*) is a species of Fig (*Ficus Sycomorus*). The Greek name is derived from *sukon*, fig, and *morou*, mulberry, from the resemblance of the leaf to that of a Mulberry. It is a large evergreen tree with low, spreading branches, bearing the fruit on short leafless twigs on the trunk or older branches; the fruit is much smaller than that of the common Fig, and but poor eating; to render it palatable it must be cut at the top before it is quite ripe to allow the acrid juice to escape. The prophet Amos (7, 14) refers to himself as a gatherer of (literally "one who scraped or cut") Sycomore fruit. It is a common wayside tree, and, with its short trunk, easy to climb (Luke 19, 4). It is very susceptible of cold, and occurs in Palestine in the mild climate of the maritime plains and in the hot Jordan Valley. The last-named locality is referred to (1 Kings 10, 27; 2 Chron. 1, 15; 9, 27) where it is stated that Solomon made cedars to be "as the sycomore trees that are in the low plains in abundance." Its wood is very light and porous, but of great durability, and was used by the Egyptians for making their mummy cases and for articles of furniture.

SHITTAH TREE. SHITTIM WOOD.

The tree itself is mentioned once only (Isa. 41, 19), but its wood is repeatedly referred to as the principal timber used in the construction of the Tabernacle in the wilderness (Exod. 25, 26, 27, 30). It is a species of *Acacia*, *A. Seyal*, a gnarled and thorny tree which flourishes in the driest situations in the Arabian desert. The timber is hard, close-grained, and of a fine orange-brown colour. It is of great commercial value as yielding gum arabic, which exudes from the bark. Several places were named from the *Acacia*, as "the Valley of Shittim" (Joel 3, 18), and the plains of Shittim—the last camping place of the children of Israel before crossing the Jordan (Numb. 25, 1).

TEREBINTH OR TEIL TREE.

The Hebrew *élâh*, denoting a strong, hardy tree, occurs in several places in the Bible, and is variously rendered "Teil tree" (Isa. 6, 13), "Elm" (Hosea 4, 13), "Oak" (Gen. 35, 4; Judges 6, 11; 2 Sam. 18, 9, 10): in Gen. 18, 1, the plural *élôn* is translated "plains." The Septuagint rightly renders it "Terebinth tree" (*Pistacia Terebinthus*), known in the Greek islands as the "Turpentine tree," from the quantity of turpentine which exudes on tapping the trunk. In general appearance it resembles the Oak, especially when it sheds its leaves at the beginning of winter. It is very common in the southern and eastern parts of Palestine, occurring generally in places too warm or dry for the Oak.

WILLOW.

The two Hebrew words *‘arâbîm* and *çaphçâphâh* are rendered "Willow," indicating trees that flourished by water-courses. Several species of Willow (*Salix*) occur in Palestine, including the Weeping Willow (*Salix babylonica*), which has been associated with the tree of the Captivity (Psalm 137, 2). The Arabic *safsaf*, one of the vernacular names for Willow, is no doubt identical with the second Hebrew name mentioned.

Canon Tristram suggests that the Willow by the water-courses, of Scripture, is applicable rather to the Oleander (*Nerium Oleander*), a very characteristic plant of Palestine, forming a fringe along the whole Upper Jordan, and marking the course of streams by a line of deep green, or in the flowering season, burning red. It is a shrub with long, narrow, willow-like leaves, but sometimes attains tree-like proportions.

NUTS.

The Hebrew *ġgóz*, rendered "nuts" in Cant. 6, 11, "I went down into the garden of nuts to see the fruits of the valley," refers to the Walnut-tree (Arabic, *ghaus*). The Walnut (*Juglans regia*), a native of Persia, was early spread through Western Asia and Europe. It is cultivated everywhere in Palestine, and its grateful shade, noble spreading growth, and the fragrance of the leaves must have rendered it a favourite tree in the gardens of Solomon.

The Hebrew *boṭnīm*, also translated "nuts" (Gen. 43, 11), refers, doubtless, to the Pistachio nut (Arabic, *batam*), the product of *Pistacia vera*, a tree allied to the Terebinth, which at a distance it closely resembles. It bears a large crop of nuts shaped like an almond, but rounder and glossy; the edible kernel is bright green, with the flavour of a walnut. It is widely cultivated in Palestine for the sake of its fruits, and as it was not found in Egypt the fruit was an appropriate present, together with the balm, honey, etc., sent by Jacob to his son Joseph.

VINE.

Frequent reference is made in the Bible to the Vine, its fruit, and the wine made from it. The plant, which is probably a native of some part of Western Asia, has been cultivated from the earliest times. Noah is recorded as planting a vineyard after the Deluge, and as making wine from the grapes (Gen. 9, 20, 21). Reference to its cultivation in Egypt occurs in Gen. 40, 9-11, and there are many representations of the plant on the Egyptian and Assyrian monuments (a photograph of one of the latter is shown). The Land of Promise was pre-eminent for its vines and the quality of the wine; and vineyards were abundant before the Israelites came into possession. The spies sent by Moses brought back a huge bunch of grapes from the vale of Eschol (*i.e.*, "cluster of grapes"); and this valley, a little to the south of Hebron, still produces the finest grapes in Palestine. The climate of Palestine is admirably suited to the Vine, and the land was once clad on every hill with terraced vineyards, traces of which are left in the wine presses and vats hewn in the rocks; but the cultivation has diminished, partly from the desolation of the land and partly from wine being prohibited to the Moslems. The latter, however, still plant the Vine for the sake of its fruit, and for raisins. References to raisins, or grapes dried in the sun, as articles of food, occur in the Old Testament (1 Sam. 25, 18; 30, 12;

1 Chron. 12, 40). Various qualities both of vines and wine are referred to in Scripture. The thin sour wine used by the poorer classes is often translated "vinegar" (Ruth 2, 14), and such was probably the vinegar offered to Christ on the Cross. "Wine on the lees" (Isa. 25, 6) was wine kept on the lees or dregs without straining, for the purpose of increasing its body. The juice was expressed by treading; it was hard work, and the men encouraged one another by shouting (Jer. 25, 30); their feet and legs were bare, but as they leaped upon the grapes their clothes became dyed with the juice (see Gen. 49, 11; Isa. 63, 2, 3).

The Wild Vine bears a small black grape which is very acid and astringent, and used only for verjuice or vinegar (Isa. 5, 2).

WILD GOURD.

The Wild Gourds (Heb., *paqqû'ôth*) that were shred into the pot of pottage (2 Kings 4, 38-40) are described as the fruit of a wild vine, and were probably the fruit of the Colocynth (*Citrullus Colocynthis*), a member of the Cucumber family with vine-shaped leaves and tendrils. The fruit is tempting in appearance, but has an extremely nauseous bitter pulp, which dries rapidly when ripe, and is used medicinally as an active purgative. It grows abundantly on the barren sands near Gilgal, and all round the Dead Sea.

An alternative suggestion is the Squirting Cucumber (*Ecballium Elaterium*), the fruit of which bursts when ripe, expelling the seeds, and also affords a drastic purgative.

Canon Tristram suggests that the Vine of Sodom (Deut. 32, 32) also refers to the Colocynth.

HERBACEOUS PLANTS.

CORN.

There are many distinct words in Hebrew relating to corn generally, such as *dâgân*, in such expressions as "corn and wine" *qâmâh*, standing corn (as in Judges 15, 5); *bar*, clean winnowed corn (Gen. 41, 49); *shibbôleth*, an ear of corn (Gen. 41, 5; Ruth 2, 2). The cereals referred to in the Bible are Wheat, Spelt (translated "Rie" and "Fitches"), Barley, and Millet.

WHEAT.

Wheat has been cultivated from prehistoric times, and is not known in the wild state. It was one of the blessings of the Promised Land (Deut. 8, 8), and the time of wheat harvest is named repeatedly (Gen. 30, 14; 1 Sam. 12, 17) as one of the epochs of the year; it was usually in May, about a month after barley harvest. There are numerous varieties of wheat; the reference in Pharaoh's dream (Gen. 41, 5) to the seven ears on one stalk appears to be to the form which is still commonly cultivated in Egypt, and known as "Mummy Wheat" (*Triticum compositum*). The form now most generally grown in Palestine is Spelt (*Triticum Spelta*), mention of which occurs in the Old Testament as the Hebrew *kussémeth*, translated "rie" (Exod. 9, 32; Isa. 28, 25) and "fitches" (Ezek. 4, 9). The wheat is sown in November or December, immediately after the barley. When reaped it is threshed, either by oxen treading out the corn on the hard threshing-floor (*cf.* Deut. 25, 4), or by a heavy wooden wheel or roller, or by a flail (*cf.* Isa. 28, 27). From the time of Solomon, Palestine was a corn-exporting country (1 Kings 5, 11; 2 Chron. 2, 10, 15). Parched corn, which is repeatedly mentioned in Scripture, was wheat scorched, generally while fresh, and was eaten without further preparation.

BARLEY.

Barley is generally grown in Palestine. It will thrive in a much lighter soil than wheat, and arrives earlier at maturity. It is usually sown about the same time as wheat, but the barley harvest is over three weeks or a month before wheat harvest begins; the barley was generally got in at the time of the Passover. The barley being in the ear was destroyed in Egypt by the plague of hail, while the wheat escaped, for it was not grown up (Exod. 9, 31, 32). Barley is the universal food in Palestine of horses and asses, and sometimes also of draught oxen; it is also largely used as food for man, but is held in much less esteem than wheat.

MILLET.

Millet (Heb., *dôhan*) is one of the ingredients from which Ezekiel was ordered to make bread: "Take thou also unto thee wheat, and barley, and beans, and lentiles, and millet, and fitches [marginal, spelt], and . . . make thee bread thereof" (Ezek. 4, 9).

The two specimens shown, *Panicum miliaceum* and *Sorghum vulgare* (the North Africa Dourrha), may both be included here, as both are cultivated in the Holy Land, and the meal that they yield is used for food.

TARES.

The Tares (Gr., *zizania*) of the Parable of the Wheat and the Tares (Matt. 13, 24-30) are the Darnel (*Lolium temulentum*), a grass that is abundant in the countries around the Mediterranean Sea, and is peculiar in that its seeds are poisonous. It is a common weed in the cornfields, and in early stages would be indistinguishable from the wheat.

LENTILS.

Lentils (Heb., *ʿādāshīm*) are the seeds of a vetch-like plant that is much cultivated on the poorer soils in Palestine. The red pottage for which Esau sold his birthright was of lentils (Gen. 25, 29-34). Lentils, beans, and parched pulse were among the supplies brought to David in Gilead when he fled from Absalom (2 Sam. 17, 28). It is generally used as a pottage, but is also mixed with wheat, barley, beans, etc., for bread (*cf.* Ezek. 4, 9).

REED.

The Reed of Egypt and Palestine is *Arundo Donax*, the slender yielding stem of which reaches 12 feet in height, and bears at the top a magnificent cluster of blossom. It is doubtless the "reed shaken with the wind" of the wilderness (Matt. 11, 7).

BULRUSH. RUSH.

The Hebrew *gômē*, translated "bulrush" (as in Exod. 2, 3) and "rush" (as in Isa. 35, 7), is without doubt the Papyrus (*Cyperus Papyrus*), which formerly abounded on the Nile, flourishing in the mire, as described in Job (8, 11), but is now wholly extinct in Egypt. The stem is 10 or more feet high, and ends in a many-rayed broom-like head of minute flowers. From the white pith, cut lengthwise into thin slices, was made the earliest known paper.

FLAX (*Linum sativum*).

The use of linen was universal in Egypt, as it was the exclusive textile fabric. The importance of the crop is indicated by its mention in the plague of hail (Exod. 9, 31), which occurred at the

time when "the flax was balled"—i.e., forming the seed-pod. Flax was in cultivation in Canaan before the entrance of the Israelites: Joshua's spies were hidden on the roof of the house at Jericho with the stalks of flax which were spread to dry in the sun (Joshua 2, 6), as is the custom at the present day. Its use for lamp-wicks is referred to in the quotation, "The smoking flax shall he not quench" (Isa. 42, 3; Matt. 12, 20).

HYSSOP.

There has been much discussion as to the identity of the plant that was used for sprinkling the door-posts with the blood of the paschal lamb (Exod. 12, 22), and also as a sprinkler in the purification of lepers and leprous houses (Lev. 14, 4, 6, 51), and in the sin-offering (Numb. 19, 6, 18). The Caper (*Capparis spinosa*) is perhaps the most likely suggestion; it is a bright green creeper, the long stems of which hang from the fissures of the rocks in the desert, and is plentiful in Egypt and the desert of Sinai. Another suggestion is *Satureia Thymbra*, a plant something like the mint; and still another, the marjoram, *Origanum vulgare*: bunches of either of these would form an efficient sprinkler.

Few references to FLOWERS occur in the Bible. The Rose and Lily are both mentioned in the English version, but it is very doubtful what specific flowers are referred to.

ROSE.

Two references to the Rose occur in Scripture: "I am the Rose of Sharon" (Cant. 2, 1), and "The desert shall rejoice and blossom as the rose" (Isa. 35, 1). The Hebrew word *hăbaçéleth*, which has been translated "rose," indicates a bulbous plant, and may refer to the sweet-scented Narcissus (*Narcissus Tazetta*), a native of Palestine, and at the present day a great favourite with the inhabitants. The plant known to us as the rose is not a native of Palestine, except in the mountainous country in the north.

LILY.

The Hebrew *shôsan* and *shôsammâh*, translated "lily," occur in several passages in the Song of Solomon and elsewhere in the Old Testament. In the Sermon on the Mount the lilies of the field

(Greek, *krina*) are mentioned for their beauty. There has been much discussion as to what particular flower may have been intended. The Arabs apply the same word, *susan*, to any brilliantly flowered herb, as the tulip, anemone, or ranunculus. The true Lily is not a native of Palestine. One of the most conspicuous and wide-spread of the spring flowers is *Anemone coronaria*, which forms a brilliant carpet on the plains, and is plentiful by the shores of the Lake of Galilee. It meets all the requirements of the various allusions, and may well have been the flower indicated.

CUCUMBER. MELON.

Cucumbers and Melons are referred to in Numb. 11, 5, when the Israelites regretted the good things they had left in Egypt.

The common Cucumber (*Cucumis sativus*) is extensively grown in Egypt and Palestine, and forms an important item in the summer food of the poor. "The lodge in a garden of cucumbers" (Isa. 1, 8) was the rude booth erected to protect the field from destructive wild animals, such as jackals.

The Melon (*Cucumis Melo*) and the Water Melon (*Citrullus vulgaris*) are both largely cultivated in Palestine and Egypt.

GOURD.

The only reference occurs in Jonah (4, 6-10), and there has been much discussion as to the meaning of the Hebrew *kikayon* there used. It has been identified on etymological grounds with the Castor-oil tree (*Ricinus*), which, however, is not an arbour plant, and the original rendering is probably the correct one, as the Gourd (*Cucurbita Pepo*) is a rapidly growing climber that would quickly cover a booth and afford grateful shade. It also withers very quickly if the stem is injured.

MANDRAKE.

The fruit of the Mandrake (*Mandragora officinarum*) (Heb., *dūdāim*, love-plants) is still valued by the natives of Palestine, as it was in the time of Rachel and Leah (Gen. 30, 14). It resembles a large round yellow plum, and has a peculiar smell (see Cant. 7, 13) and a pleasant sweet taste. Many strange superstitions have been associated with the plant; it was supposed to resemble the shape of a man, and to shriek when dug up.

ONION. LEEK. GARLICK.

Mention of these occurs in one passage (Numb. 11, 5) among the good things that the Israelites had enjoyed in Egypt, and were no longer able to procure in the wilderness. Herodotus refers to the Onion (*Allium Cepa*) as an article of food in Egypt, and in its raw state it is much used by Orientals when on a journey, as a preservative against thirst.

The Leek (*Allium Porrum*) is the rendering of the Hebrew *hâqîr*, which elsewhere in the Old Testament is rendered "herbs" or "grass," doubtless rightly, as it is derived from a root signifying to be green. The grass-like leaf and green colour of the leek render the word appropriate.

Garlic (Heb., *shûm*) is another species of *Allium* (*A. sativum*), akin to the onion, and much cultivated in Egypt and Syria.

MINT. ANISE. CUMMIN. RUE.

These four herbs are referred to as subjects of tithe by the scrupulous Jews (Matt. 23, 23 ; Luke 11, 42).

Mint was commonly used with their meat by the Jews, and is said to be one of the bitter herbs eaten with the paschal lamb. The common wild mint of the country is *Mentha sylvestris*.

Anise or Dill (*Anethum graveolens*) is a herb resembling the Caraway in appearance, and is cultivated in the East for its seeds, which are used as a carminative and for seasoning dishes. To the same family (Umbelliferae) belongs Cummin (*Cuminum sativum*), also cultivated for its seeds, which are often used as a spice in the East. Isaiah alludes to the mode in which the seeds are beaten out (28, 27).

Rue (*Ruta graveolens*), a herb with a powerful distinctive odour, was highly prized by the ancients for its medicinal properties, and was long regarded as efficacious in warding off contagion.

FITCHES.

Two words are translated "fitches" in the Authorised Version. One, the Hebrew *kussémeth* (Ezek. 4, 9), is elsewhere translated "rie" (see WHEAT). The other is the Hebrew *qéçah*—"the fitches are beaten out with a staff" (Isa. 28, 27). This refers to a small annual, *Nigella sativa*, closely allied to the plant known in gardens as Love-in-a-mist ; it is cultivated in Egypt and Syria for its black seeds, which are used as a condiment.

MANNA.

A species of Lichen (*Lecanora esculenta*), found in North Africa and Eastern deserts and mountains, supplies the inhabitants with food that they regard as sent from heaven. Great quantities are sometimes carried by the wind into the valleys, where it is then collected; it forms small greyish or whitish lumps from the size of a pea to that of a hazel-nut.

The sweet substance now known as Manna is an exudation from the bark of the Manna Ash (*Fraxinus Ornus*); a similar exudation occurs on other trees, including the Tamarisk, which grows in the Sinai peninsula, but it is collected only in small quantities.

A Lichen (*Roccella tinctoria*) has also been suggested as one of the sources of the blue or purple dyes referred to in Scripture. It has long been used in the East for this purpose.

MUSTARD.

The small size of the Mustard seed—"a grain of mustard seed"—is used by Christ as an example on three occasions; in one case also it is compared with the size of the plant when grown—"the greatest among herbs," becoming "a tree" (Matt. 13, 31, 32). The Common Mustard of Palestine is the same species as our own mustard, *Sinapis nigra*, but grows to a much greater size in Palestine, especially in the richer soils of the Jordan Valley; plants as tall as a horse and its rider are mentioned by travellers.

WORMWOOD.

Wormwood (Heb., *la'ânâh*) is frequently used metaphorically as something bitter. It is the common name of plants of the genus *Artemisia*, well known for their bitter taste. Several species grow in Palestine; the one shown, *Artemisia monosperma*, occurs along the coast.

PERFUMES.

Many of the perfumes mentioned in the Bible are derived from plants that were not native of Palestine. The product was imported, as in the case of Spikenard or Aloes from Northern India, or Frankincense and Myrrh from Arabia.

SPIKENARD.

Spikenard is procured from a Himalayan plant, *Nardostachys jatamansi*, the young spike-like shoots of which are picked and dried. It was known in Palestine in Old Testament times (*see* Cant. 1, 12; 4, 13, 14), and in the New Testament is referred to as an ingredient of the costly ointment used by Mary to anoint the feet of Jesus (John 12, 3).

ALOES.

The Aloes mentioned in various passages in connection with other foreign spices—"myrrh, and aloes, and cassia" (Psalm 45, 8), "a mixture of myrrh and aloes" (John 19, 39)—is probably the product of a Northern Indian tree, *Aquilaria Agallochum*, from the wood of which is extracted a sweet-scented resin.

This is quite distinct from the resin known as Bitter Aloes—the product of a species of Aloe. It has, however, been suggested that the latter is the substance referred to, which was used, not for the sake of its own scent, but for retaining the scent of the other ingredients.

FRANKINCENSE.

Frankincense is a fragrant gum-resin (*olibanum*) which exudes as a milky juice from the stem and also the leaves and flowers of a small tree, *Boswellia Carteri*, the Frankincense or Luban tree, a native of tropical Arabia and Somaliland. It was an essential ingredient of the incense used by the Jews, and is similarly used at the present day.

MYRRH.

Myrrh is another gum-resinous exudation, the product of a bush or small tree, *Balsamodendron Myrrha*, with short spine-like branchlets. The gum oozes from the bark as a viscid white liquid, which rapidly hardens on exposure to air. The tree is a native of Southern Arabia and Somaliland. Frequent mention of Myrrh occurs both in the Old and in the New Testaments. It was an important ingredient of the holy anointing oil of the Tabernacle (Exod. 30, 23), and was used also as a perfume (Psalm 45, 8; Prov. 7, 17), and for embalming (John 19, 39).

BALM.

The most precious Balm, that of Gilead, was probably derived from *Balsamodendron gileadense*, a shrub or small tree, native of

Arabia and the opposite coast of Africa. It was formerly cultivated in the plains of Jericho, where it was planted, according to Jewish tradition, by Solomon, who received a root from the Queen of Sheba. The word, which is a translation of the Hebrew *çěrí*, was perhaps applied to medicinal gum or oil prepared from trees of different species.

CINNAMON. CASSIA.

Cinnamon (Heb., *qinnámôn*) was one of the principal ingredients of the precious ointment of the Tabernacle (Exod. 30, 23), and is also referred to as a perfume (Prov. 7, 17; Cant. 4, 14). It is derived from the bark of a tree native in Ceylon and known as *Cinnamomum zeylanicum*. Cassia, which was another ingredient of the holy ointment, is similarly derived from a closely allied species, *Cinnamomum Cassia*, a native of India and China.

SAFFRON.

Saffron, which is once referred to (Cant. 4, 14) in connection with spikenard, is of high repute as a perfume and condiment in the East. It consists of the orange-red stigmas of a species of Crocus (*C. sativus*), which are dried in the sun and pounded, or pressed into small cakes.

PRICKLY PLANTS.

BRAMBLE. BRIER. THISTLE. THORNS.

At least eighteen Hebrew words are used in the Bible for prickly plants. These are indifferently rendered "bramble," "brier," "thorn," or "thistle," and there is very little to help towards their identification.

The combined heat and dryness of the climate of Palestine favour the development of thorn-bearing plants. A few of these are shown below, and an attempt has been made to associate them with the Hebrew terms of Scripture.

Âtâd, translated "bramble" in Jotham's parable of the trees (Judges 9, 14), and "thorns" (Psalm 58, 9), has been referred to *Lycium europæum*, a plant with numerous erect branches and stiff

sharp spines which is very common in all parts of Palestine, and is often used for hedges.

Dardar, translated "thistles" (Gen. 3, 18; Hosea 10, 8), is rendered *tribolos* in the Septuagint; and the same word occurs in the New Testament—"Do men gather . . . figs of thistles?" (Matt. 7, 16), and in Heb. 6, 8, where it is translated "briers." The plant referred to is generally admitted to be the Star-Thistle, *Centaurea Calceitrapa*, a troublesome weed in cornfields in Southern Europe and Western Asia.

The Hebrew *hóah* is also often rendered "thistles" (2 Kings 14, 9; Job 31, 40); also "thorns"—*e.g.*, "as the lily among thorns" (Cant. 2, 2). Two common thistles in the cornfields are *Notobasis syriaca* and *Scolymus maculata*.

A species of *Zizyphus* (*Z. spina-Christi*), a bush or tree with flexible branches bearing long sharp thorns, is supposed to have supplied the material for the crown of thorns (Matt. 27, 29). It is called *nubb* by the Arabs, and is often used as material for fences. The thorns of the wilderness with which Gideon "taught the men of Succoth" (Judges 8, 7, 16) may have referred to this tree, which is very plentiful in the Jordan Valley.

A characteristic spine-bearing plant of Palestine is a species of *Acanthus* (*A. syriacus*); the margin of the leaves bears stiff spines, and the thick flower-spike is also remarkably spiny.

III.—MINERALS.

WHEREAS a knowledge of the animals and plants now found in Palestine is of great help to us in the recognition of the animals and plants mentioned under Hebrew or Greek names in the Bible, a knowledge of the minerals now found in that country is comparatively useless for a similar purpose, since the minerals mentioned in the Bible are mostly precious stones, which, presumably, had been carried into Palestine from other lands.

There are definite references in the Bible to mineral-bearing regions outside Palestine; for instance, the "land of Havilah, where there is gold; and the gold of that land is good: there is bdellium and the onyx stone" (Gen. 2, 11, 12), the "gold of Parvaim" (2 Chron. 3, 6), the "gold of Ophir" (Job 28, 16), and the "topaz of Ethiopia" (Job 28, 19). The precious stones that were mounted in the Breastplate of the High Priest may have been acquired by the Israelites in Egypt, and have been taken thither as merchandise by travellers from distant countries.

In the time of the prophet Ezekiel (about B.C. 600), Tyre, the famed city of the Phœnicians, the greatest sea-faring traders of ancient days, was a centre of distribution of the produce of many lands: "And say unto Tyrus, O thou that art situate at the entry of the sea, which art a merchant of the people for many isles" (Ezek. 27, 3). That part of the merchandise sold at Tyre was of a mineral character is shown by the following passages from the same chapter:—

"Tarshish was thy merchant by reason of the multitude of all kind of riches; with *silver, iron, tin, and lead*, they traded in thy fairs. Javan, Tubal, and Meshech, they were thy merchants: they traded the persons of men and vessels of *brass* in thy market. . . . Syria was thy merchant by reason of the multitude of the wares of thy making: they occupied in thy fairs with *emeralds, purple, and brodered work, and fine linen, and coral, and agate*. . . . Dan also and Javan going to and fro occupied in thy fairs: bright *iron, cassia, and calamus*, were in thy market. . . . The merchants of Sheba and Raamah, they were thy merchants: they occupied in thy fairs with chief of all spices, and with *all precious stones, and gold*."

Great difficulty is found in translating the Hebrew and Greek

names of minerals mentioned in the Bible into names that would be used for the same minerals in a particular country at the present day. For it is only within the last century, through the development of the sciences of chemistry and crystallography, that it has become possible to define mineral species with any considerable approach to precision. For the differentiation of minerals in ancient Greek and Roman times stress could be laid only on density, or on characters less capable of precise determination and statement, such as colour, transparency, hardness, tenacity, fusibility, combustibility, action on other materials, and so on. Hence, various minerals were then brought together into a single kind, and indicated by a single name, that are now distributed into different kinds and mentioned under different names. For example, the Latin term *carbunculus* included in Roman times hard, transparent, red stones which would now be assigned to different species and given different names, as Oriental ruby (corundum), Balas ruby (spinel), Almandine and Pyrope (garnet); for they are entirely different from one another in characters more important than either transparency or colour from a classificatory point of view. And conversely, some minerals then distributed into different kinds and mentioned under different names are now included in a single kind and designated by a single name; for, though differing in some obvious character—for instance, colour—they are identical in percentage chemical composition and in crystalline form.

1. THE FOUNDATIONS OF THE NEW JERUSALEM.

For reasons that will become manifest later, it will diminish the risk of confusion if we consider first the minerals mentioned in the New Testament, more especially the remarkable list of precious stones given in Rev. 21, 19, 20, Authorised Version:—

“And the foundations of the wall of the city were garnished with all manner of precious stones. The first foundation was jasper (Greek, *iaspis*); the second, sapphire (Greek, *sappheiros*); the third, a chalcedony (Greek, *chalkēdōn*); the fourth, an emerald (Greek, *smaragdōs*); the fifth, sardonyx (Greek, *sardonux*); the sixth, sardius (Greek, *sardion*); the seventh, chrysolite (Greek, *chrusolithos*); the eighth, beryl (Greek, *bērullion*); the ninth, a topaz (Greek, *topazion*); the tenth, a chrysoprasus (Greek, *chrysoprasos*); the eleventh, a jacinth (Greek, *huakinthos*); the twelfth, an amethyst (Greek, *amethystos*).”

Only four of these stones are mentioned elsewhere in the New Testament, also in the Book of Revelation, namely: jasper (Rev. 4, 3; 21, 18), emerald (Rev. 4, 3), sardine stone (Rev. 4, 3), jacinth (Rev. 9, 17).

It will be remarked, in the first place, that the English names used in the Authorised Version for the above stones are mere adaptations of the original Greek names; the original names, though given an English form, are really little changed. But it will be found on investigation that some of these English names, though mere adaptations of the Greek (through the Latin), are now used to designate stones quite different from those formerly designated by the Greek names from which they have been derived. For instance, according to Pliny, the *topazion* of New Testament times was a green stone yielding to the action of a file, and said to be brought from an island in the Red Sea, off the coast of Arabia. On the other hand, the topaz of the present day is not a green stone, does not yield to the action of a file, and is not brought from an island in the Red Sea. The account given by Pliny with respect to the *topazion* of his day is thus not appropriate to the topaz of our day; it is appropriate to another kind of stone, the one now named peridot.

For the purpose of interpretation of the Bible, it is thus necessary to ascertain, not to what stones the English names in the Book of Revelation are applied now or were applied at the epoch of the authorised translation (A.D. 1611), but to what stones the Greek names were applied at the time when the Book was written.

St. John, the writer of the Book of Revelation, lived for some time in exile at Patmos, an island in the Ægean Sea, and died about A.D. 100 at Ephesus, capital of Ionia, in Asia Minor. He is thought by some to have committed the book to writing about A.D. 68-70; by others the writing is assigned to the close of Domitian's reign, about thirty years later. The character of the Greek itself has been described as rugged, and as suggesting that St. John, though writing in that language, thought really in Hebrew. St. John was thus a contemporary of Pliny the Naturalist, who was born in A.D. 23 and perished in A.D. 79 near Vesuvius during the great eruption that destroyed Herculaneum and Pompeii. Pliny's great work on Natural History, published in A.D. 77, only two years before his death, tells us what was known about minerals by naturalists at the time when St. John himself was living.

The following are statements made by Pliny relative to the stones mentioned by St. John as foundations of the New Jerusalem; they are arranged, for convenience of reference, in the alphabetical order of the transliterated Greek names:—

Amethustos (Latin, *amethystus*): twelfth foundation.

Four varieties were recognised as precious, all of them transparent, and of purple colour or of tints derived from purple.

One of the varieties was doubtless the amethyst of the present day.

Bērullion (Latin, *beryllus*): ninth foundation.

There were eight varieties of *beryllus*, a mineral which, according to Pliny, was already thought by some to be “of the same nature as the *smaragdus*, or at least closely analogous. India produces them, and they are rarely to be found elsewhere. The lapidaries cut all beryls of an hexagonal form; because the colour, which is deadened by a dull uniformity of surface, is heightened by the reflections resulting from the angles. If they are cut in any other way, these stones have no brilliancy whatever. The most esteemed beryls are those which in colour resemble the pure green of the sea. Some are of opinion that beryls are naturally angular.”

Probably the sea-green beryl of Pliny’s time was the sea-green beryl of the present day.

Chalkēdōn: third foundation.

Though the name *Chalcedon* (Latin form) occurs in Pliny, it is not as the name of a mineral; it is used as the name of a free town that was standing on the southern side of the Bosphorus, probably close to the site on which Scutari has since been built. Chalcedon had once been noted for its copper mines; but the latter, when Pliny wrote, had been so far exhausted that they were no longer worked. Pliny refers to a kind of *smaragdus* (a green stone) as having been found near Chalcedon, but adds that the stones were of very small size and value. They were “brittle, and of a colour far from distinctly pronounced; they resembled in their tints the feathers that are seen in the tail of the peacock or on the neck of the pigeon. More or less brilliant, too, according to the angle at which they were viewed, they presented an appearance like that of

veins and scales." In another place he refers to a stone from Chalcedon or Calchedon (another reading) as being an *iaspis* of turbid hue. It is possible that at Patmos or Ephesus, where St. John was living when he wrote the Book of Revelation, the word *chalkēdōn* was used to specify the particular kind of *smaragdus* which had been found near the town of that name. The signification now attached to the name "chalcedony" cannot be traced farther back than the fifteenth century.

In the Vulgate Version the word is Latinised as *calcedonius*.

Chrusolithos (Latin, *chrysolithus*): seventh foundation.

The *chrysolithus* was a "transparent stone, with a refulgence like that of gold." Those were most valued which, "when placed by the side of gold, impart to it a sort of whitish hue, and so give it the appearance of silver."

It may perhaps have included the yellow sapphire, the yellow quartz (citrine), and the yellow jargoon (zircon) of the present day. The term "chrysolite" is now applied to a different mineral, namely, to a yellow variety of olivine, a species which includes the green mineral peridot as another of its varieties.

Chrusoprasos (Latin, *chrysoprasus*): tenth foundation.

The *chrysoprasus* was regarded by some naturalists of the time of Pliny as a variety of *beryllus*. The first variety of *beryllus* and the most esteemed was, as already stated, of a pure sea-green colour; the second was paler, and approached a golden tint; the third, allied to the second in brilliancy, but more pallid, was the *chrysoprasus*. The latter was thought by other naturalists to belong to an independent genus of stone. In another place Pliny describes the colour as like that of the leek, but as varying in tint between the green *topazion* of his day (our peridot) and gold.

The stone may have been a yellowish green plasma (chalcedony) or, as suggested by King, a pale chrysoberyl; it is not the chrysoprase of the present day.

Huakinthos (Latin, *hyacinthus*): eleventh foundation.

Pliny describes the *hyacinthus* as being very different from *amethystus*, "though partaking of a colour that closely borders upon it," and as being of a more diluted violet.

It may have been the pale blue sapphire of the present day; the modern hyacinth or jacinth is a brownish to reddish zircon, a quite different stone.

Iaspis : first foundation.

Pliny recognises fourteen varieties of *iaspis*, and describes it as being generally green and often transparent. He adds that "many countries produce this stone : that of India is like *smaragdus* in colour ; that of Cyprus is hard and of a full sea-green ; and that of Persia is sky-blue. Similar to the last is the Caspian *iaspis*. On the banks of the river Thermodon the *iaspis* is of an azure colour ; in Phrygia it is purple ; and in Cappadocia of an azure-purple, sombre and not refulgent. The best kind is that which has a shade of purple, the next best being the rose-coloured, and the next the stone with the green colour of the *smaragdus*," etc., etc.

The term "jasper" is now restricted to opaque stones ; the transparent green *iaspis* may have been identical with the stone that is called "plasma" in the present day.

Sappheiros (Latin, *sapphirus*) : second foundation.

Pliny describes it as "refulgent with spots like gold. It is also of an azure colour, though sometimes, but rarely, it is purple ; the best kind being that which comes from Media. In no case, however, is this stone transparent."

These characters correspond to the lapis lazuli, not the sapphire, of the present day.

Sardion (Latin, *sarda*) : sixth foundation.

The *sarda* was much used by the seal-engravers. There were three Indian varieties, all of them transparent, one of them red in colour ; there was then no precious stone in more common use ; those of honey-colour were less valued.

It probably included the sard and carnelian of the present day.

Sardonix (Latin, *sardonyx*) : fifth foundation.

According to Pliny, the name *sardonyx* was at first given to an Indian (red) *sarda* with a layer of white in it, both being transparent. Pliny says that later three colours were considered essential, but that they might be repeated indefinitely. The Arabian *sardonyx* was "characterised by several different colours, black or azure for the base, and vermilion surrounded with a line of rich white for the upper part, not without a certain glimpse of purple as the white passes into the red."

It is included in the sardonyx of the present day.

Smaragdus (Latin, *smaragdus*): fourth foundation.

Pliny recognises no fewer than twelve kinds of *smaragdus*: the colour was intensely green.

One of these kinds was the emerald of the present day.

Topazion: eighth foundation.

The *topazion* of Pliny's time was "held in very high estimation for its green tints: when it was first discovered it was preferred to every other kind of precious stone." It was said to be brought from an island in the Red Sea, off the coast of Arabia. It was the only stone of high value that yielded to the action of the file.

It is termed peridot in the present day.

All the names of precious stones mentioned by St. John in his description of the foundations of the New Jerusalem, with the sole exception of *chalkēdōn*, were thus in his time commonly used by naturalists. Further, nearly all the stones then regarded as precious are included in the twelve mentioned by St. John.

The more important stones recorded by Pliny, but not mentioned by St. John as foundations, are:—

Crystallum and *Adamas*; both of them colourless.

Onyx; remarkable rather for structure than colour.

Electrum (amber); a soft material.

Carbunculus; fiery red.

Callaina; a pale green stone, probably the green turquoise of the present day.

Cyanus; of dark blue colour.

Opalus (opal); with its play of colours, it ranked in Pliny's time immediately after *smaragdus* in value.

Achates (agate) is also absent from the list of foundations; but *achates*, though previously held in very high esteem, by Pliny's time had ceased to be regarded as precious. Also, it is attractive for the beauty of its structure, whereas the foundations are remarkable for the splendour of their colours.

There is nothing to suggest that the name *chalkēdōn* was ever applied to any of these stones.

The colours of the foundations were:—

1st, (probably) Green; 2nd, Intense Blue; 3rd, *Chalkēdōn*; 4th, Intense Green; 5th, Red; 6th, Red; 7th, Yellow;

8th, Sea-Green ; 9th, Olive-Green ; 10th, Pale Green ;
11th, Pale Purple ; 12th, Purple.

From the arrangement of the colours it would therefore appear likely that the *chalkēdōn* was either a blue or a green stone, and that it might therefore be, as already suggested, the variety of *smaragdus* said by Pliny to have once been brought from a mountain near the free town called Chalcedon.

2. THE BREASTPLATE OF THE HIGH PRIEST.

Before discussing the other minerals mentioned in the New Testament, it will be best to consider the precious stones mentioned in the Old Testament, more especially those mounted in the Breastplate of the High Priest.

A. AUTHORISED VERSION.

Exodus 28 (17-21), Authorised Version :—

“The first row shall be
a sardius (Hebrew, *ólem*), a topaz (Hebrew, *pīḏál*), and a carbuncle (Hebrew, *búréqeth*) : this shall be the first row.

And the second row shall be
an emerald (Hebrew, *nóphék*), a sapphire (Hebrew, *sappír*), and a diamond (Hebrew, *yahálóm*).

And the third row
a ligure (Hebrew, *léshem*), an agate (Hebrew, *shěbó*), and an amethyst (Hebrew, *ahlamáh*).

And the fourth row
a beryl (Hebrew, *tarshísh*), and an onyx (Hebrew, *shóham*), and a jasper (Hebrew, *yáshěphéh*) :
they shall be set in gold in their inclosings. And the stones shall be with the names of the children of Israel, twelve, according to their names, like the engravings of a signet ; every one with his name shall they be according to the twelve tribes.”

The long Captivity of the Jews in Babylon (about B.C. 606 to B.C. 534) had for result a change in the language spoken by the people ; after the return to Palestine the vernacular ceased to be Hebrew, and became a mixture of Hebrew and Chaldee. The old Hebrew ceased to be easily understood by the people (Neh. 8, 8). Hence there is now much difficulty in ascertaining the true meaning of words that occur but rarely in the Bible or elsewhere and have a technical signification, as in the case of precious stones.

Of the above twelve English names of the stones mounted in the Breastplate, we have already seen that seven occur in the Authorised Version of the New Testament as names of foundations of the New Jerusalem—sardius, topaz, emerald, sapphire, amethyst, beryl, and jasper; and it has been remarked that in giving these names the translators were merely giving in English form the Greek words *sardion*, *topazion*, *smaragdus*, *sappheiros*, *amethystos*, *bērullion*, and *iaspis*, that are used in the original text.

The remaining five English names—agate, diamond, ligure, onyx, and carbuncle—though not mentioned in the New Testament, also have similar verbal equivalents in the Greek language.

Agate, diamond, ligure, and onyx are the verbal equivalents of the Greek names *achates*, *adamas*, *ligurion*, and *onuchion*: carbuncle is the English equivalent of the Latin *carbunculus*, diminutive of *carbo*, (glowing) coal; and the Greek equivalent of *carbo* is *anthrax*.

Hence, if the English names of the stones in the Breastplate be re-translated into Greek names and arranged in the order of the English alphabet, the list will be as follows:—*achates*, *adamas*, *amethystos*, *anthrax*, *bērullion*, *iaspis*, *ligurion*, *onuchion*, *sappheiros*, *sardion*, *smaragdus*, and *topazion*.

B. SEPTUAGINT VERSION.

The Septuagint translation of the Old Testament into Greek, which was begun about B.C. 270 or 280, gives the above as the stones in the Breastplate, with one omission (*adamas*) and one addition (*chrusolithos*); the Greek and English translators of the Old Testament must, therefore, either have had a different Hebrew word in the manuscripts used by them, or have translated one or more Hebrew words differently.

In any case, the translation of a Hebrew name for a stone of the Breastplate into the English word “diamond” is certainly wrong, for the stone had a name engraved on it, and the method of engraving a diamond was not invented till two or three thousand years after the Breastplate was made; nor were diamonds, if known at all, then known so large as to be comparable in respect of size with the other stones of the Breastplate.

It is of interest to enquire into the correctness of the Septuagint translation of the various Hebrew names.

It should be remembered that, whereas the Breastplate had ceased to be known to be in existence long before the English translation was made, there was one in ceremonial use at Jerusalem till

the destruction of the city by Titus in the year A.D. 70, more than three hundred years after the Greek translation was completed. Even if the original Breastplate really vanished from history when Jerusalem was captured by Shishak, king of Egypt, about B.C. 973 (1 Kings 14, 25, 26 ; 2 Chron. 12, 9), or Nebuchadnezzar, king of Babylon, about B.C. 586 (2 Kings 24, 13 ; 25, 15 ; 2 Chron. 36, 18 ; Jer. 39, 8 ; 52, 13, 19 ; Dan. 1, 2), or Ptolemy Soter, king of Egypt, about B.C. 320, the one that had taken its place and was in use in the time of the Septuagint translators would presumably have been made to accord with the text of the Hebrew Scriptures ; on the other hand, it is very probable that during the Babylonian Captivity the knowledge of the characters of the stones of the vanished Breastplate, and of the meanings of the Hebrew names of the stones, had not been carefully passed down from one generation to another, and also that stones like those of the original Breastplate were not at the time available. Although the Septuagint translation was made at Alexandria, and direct comparison of the text with the Breastplate during the process of translation was therefore impossible, the version was afterwards in common use by the Jews at Jerusalem itself ; in fact, it eventually almost superseded the Hebrew text, for most of the quotations from the Old Testament given in the New are taken directly from the Septuagint. If the names given in that version for the stones of the Breastplate had not corresponded with the stones of the Breastplate then in use, the discrepancy would not have escaped the criticism of those Jews, perhaps few in number, who were familiar with the Greek names of the precious stones and could examine the Breastplate at Jerusalem. The names and arrangement of the stones in the Breastplate as stated in the Septuagint Version have for these reasons some claim to be treated as correct ; they are :—

	No. 1.	No. 2.	No. 3.
1st Row	<i>Sardion</i>	<i>Topazion</i>	<i>Smaragdos</i>
2nd Row	<i>Anthrax</i>	<i>Sappheiros</i>	<i>Iaspis</i>
3rd Row	<i>Ligurion</i>	<i>Achates</i>	<i>Amethystos</i>
4th Row	<i>Chrusolithos</i>	<i>Bērullion</i>	<i>Onuchion</i>

It thus becomes important to ascertain what these Greek names indicated at the time the Septuagint translation was made, and for this purpose the Greek work of Theophrastus on Stones, though brief, is very useful. It is the earliest work on Minerals that has come down to us from ancient times. The author lived about B.C. 370–287, and therefore, though his book was probably completed

before the Septuagint translation was begun (B.C. 270 or 280), he must have been a contemporary of the translators themselves.

Of the above twelve names given in the Septuagint Version, only nine are mentioned in the book of Theophrastus, namely, *achates*, *amethustos* (in the form *amethuson*), *anthrax*, *iaspis*, *ligurion* (in the form *lugkurion*), *onuchion*, *sappheiros*, *sardion*, *smaragdos*.

The three not mentioned in the work of Theophrastus are *bērullion*, *chrusolithos*, and *topazion*. It may be that the manuscript that has come down to us is incomplete, or that these three stones, though known to the Septuagint translators, were not known to Theophrastus, although their contemporary; or again, which is more likely, that they were known to Theophrastus, but under other names. He may, for instance, have regarded the green stones *bērullion* and *topazion* as belonging to the genus *smaragdos* mentioned by him, and have called them only by the latter name. The *chrusolithos*, as already stated, was later mentioned by St. John as one of the foundations of the New Jerusalem, and described by Pliny in his Natural History. Further, all the more important stones regarded as precious in the time of Theophrastus are included in the Breastplate stones mentioned in the Septuagint Version.

Achates.—The *achates* of Theophrastus, said by him to have been called after a Sicilian river of that name, was in his day sold at a great price. By the time of Pliny it had ceased to be regarded as precious (p. 51).

Achates included certain stones having banded structures, the agates of the present day.

Amethustos.—The *amethuson* (*sic*) of Theophrastus was a transparent stone "resembling wine in colour," used by the gem engravers. It doubtless is included in the amethyst of the present day (p. 48).

Anthrax.—The *anthrax* of Theophrastus included different kinds of hard, red stone used by the gem engravers. It is the *carbunculus* of Pliny's time, and probably included the Oriental ruby (corundum), the Balas ruby (spinel), and the Almandine and Pyrope (garnet) of the present day.

✓ *Bērullion*.—This name is not mentioned by Theophrastus; *bērullion*, in his time, may have been one of the green stones included in the genus *smaragdos* (p. 48).

Chrusolithos.—This name also is not mentioned by Theophrastus. The description given later by Pliny has been cited above (p. 49).

Iaspis.—The *iaspis* of Theophrastus was a hard stone used by the gem engravers. He makes no statement as to the colour, his descriptions of the precious stones being always very brief; it was probably a green stone, for he mentions a mineral specimen which was *iaspis* in one part and *smaragdus* in another, and states that in the opinion of some persons *smaragdus* is produced by the alteration of *iaspis* (p. 50).

Ligurion.—The *ligurion* of the Septuagint is probably identical with the *lugkuron* of Theophrastus: this was a yellow to yellowish red stone used by seal engravers, transparent, difficult to polish.

The yellow *ligurion* may be the yellow jargoon (zircon) of the present day, a stone which was much used by the ancient Greek and Roman engravers; but as the jargoon of the present day has not been found among ancient Egyptian work, it has been suggested that the figure of the Breastplate may have been a yellow quartz (citrine) or agate: the yellowish red *ligurion* may be one of the stones to which the name jacinth (zircon) is now applied.

Onuchion.—The *onuchion* of Theophrastus was a hard, translucent stone used by the seal engravers; it consisted of white and dusky layers in alternation.

The onyx of Roman times was an opaque stone of white and black layers.

Sappheiros.—The *sappheiros* of Theophrastus was a hard stone used by the gem engravers; he describes it as being "spotted as it were with gold."

This description was used later by Pliny in the description of the *sapphirus* of his day (p. 50), and doubtless the stones are identical with each other and with the lapis lazuli of present times.

Sardion.—The *sardion* of Theophrastus was a small, scarce stone used by the gem engravers.

It was probably included later in the *sarda* of Pliny (p. 50).

Smaragdus.—The *smaragdus* of Theophrastus was a small, scarce stone used by the gem engravers. As already mentioned under *iaspis*, that stone and *smaragdus* were probably both of them green. The genus might later include the green felspar (amazon stone); the latter was engraved in very early times, and is the material from which the signet of Sennacherib (about B.C. 700), preserved in the British Museum, was made (p. 51).

Topazion.—The name *topazion* is not mentioned by Theophrastus, and the green stone afterwards called by that name may, if known to him, have been included by him in *smaragdos*. Pliny's description has already been given (p. 51).

C. JEWISH ANTIQUITIES (JOSEPHUS).

A description of the Breastplate of the High Priest was published by Josephus in the first century of our era, and the description is of great importance from the fact that Josephus, having been a priest in the temple of Jerusalem, must have had frequent opportunities of closely inspecting the stones themselves. But it must be remembered that the Breastplate seen by Josephus may not have been identical with the one belonging to the time of the Septuagint translators: during the intervening three centuries the city of Jerusalem had been again, and more than once, in the hands of its enemies. In B.C. 198 the city was captured by Antiochus the Great; in B.C. 170 it was stormed, and its Temple plundered, by Antiochus Epiphanes (1 Maccab. 1, 20-24); in B.C. 54 the Temple was desecrated by Crassus.

Josephus was born in the first year of the reign of the Emperor Caius Caligula (A.D. 37); though the precise year of his death is unknown, he was still living near the end of the century; he was thus a contemporary both of St. John and Pliny, and Greek or Latin names then used for precious stones would have the same signification for all three writers. During the earlier Roman attacks on Palestine Josephus had been made Governor of Galilee by his countrymen, had been defeated, captured, put into irons and taken to Rome. After a time he was given his liberty, and, later, was allowed to accompany Titus, son of the Emperor Vespasian, to the siege of Jerusalem; Josephus was eventually an eye-witness of the destruction of the city (A.D. 70). One of the incidents of the destruction, recorded by him, is that a priest of the Temple was granted his life by Titus as a reward for delivering to the Romans "the precious stones and a great number of other precious vessels that belonged to their sacred worship." Josephus himself, towards whom Titus was very friendly, was allowed by that general to take possession of the Holy Books of the Temple. Later, he returned with Titus to Rome, and records that the spoils of the Temple, after being paraded in the Triumph, were placed by Vespasian in the Temple of Peace. If the Breastplate, as is possible, was part of the spoil, it could thus be inspected later by Josephus when writing

(A.D. 93) his account of the Antiquities of the Jews; though, if that ornament of the High Priest had actually passed with the other precious stones into the hands of the Roman general, a definite record would probably have been made. In any case he could compare his own description of the stones of the Breastplate (Book III, Chap. 7, par. 5) with that given in the Holy Books formerly preserved in the Temple of Jerusalem. Josephus was so great a favourite of Vespasian that he was given apartments in a house of that emperor. He wrote his account of Jewish Antiquities in Greek, and gave great attention to the study of the language, so that the literary style of his work might be worthy of its subject. Considerable accuracy can thus be claimed for the Greek names assigned by him to the stones of the Breastplate, which, according to his account, were extraordinary in largeness and beauty, and were an ornament not to be purchased by men because of their immense value. His list of the stones and that given in the Septuagint Version, if alphabetically arranged, are identical, except that *sardonux* in the former takes the place of *sardion* in the latter.

The term *sardonux* does not occur in the work of Theophrastus, and may have been invented after the time when the Septuagint translation was made. Pliny, whose description of *sardonyx* has been quoted above, says that, according to Demostratus, the first Roman to wear a *sardonyx* was the elder Africanus (about 200 B.C.), and that afterwards the stone was held in very high esteem at Rome. Doubtless the stone was known before the time of the elder Africanus, but was then included either in the sard or in the onyx.

This substitution by Josephus of the term *sardonux* for the *sardion* of the Septuagint is itself sufficient to suggest that he was writing from actual knowledge of the Breastplate; at any rate, he would not have been justified in using the new term *sardonux* instead of the old Septuagint term *sardion* for the first stone of the first row, unless he knew from direct observation that the stone belonged to that particular kind of *sardion* which has a white streak in it and is more definitely indicated by the newer term.

The arrangement of the stones in the Breastplate, according to the Jewish Antiquities of Josephus, was the following:—

	No. 1.	No. 2.	No. 3.
1st Row	<i>Sardonux</i>	<i>Topazion</i>	<i>Smaragdos</i>
2nd Row	<i>Anthrax</i>	<i>Iaspis</i>	<i>Sappheiros</i>
3rd Row	<i>Ligurion</i>	<i>Amethystos</i>	<i>Achates</i>
4th Row	<i>Chrusolithos</i>	<i>Onuchion</i>	<i>Bērullion</i>

D. VULGATE VERSION.

The account of the Breastplate given in the Latin version of the Bible known as the Vulgate is also of importance. This translation was made about A.D. 400 by Eusebius Hieronymus, better known as St. Jerome, and is valuable as a help in the criticism of the present Hebrew text; for it is probable that St. Jerome, who lived many years at Bethlehem for the purpose of making a translation direct from the Hebrew, had access to Hebrew manuscripts which have by this time ceased to exist: the earliest dated Hebrew manuscript known to us was not written till five hundred years after his day. The version of St. Jerome became corrupted in the course of centuries, and in A.D. 1590 a revised text was given to the world by Pope Sixtus V., the present Standard Edition being issued three years later by Pope Clement VIII. In this edition of the Vulgate, the alphabetical list of the names of the stones, if they are literally re-translated into Greek, is again identical with that of the Septuagint Version; but the arrangement of the stones is given as the following:—

		No. 1.	No. 2.	No. 3.
1st Row	<i>Sardion</i>	<i>Topazion</i>	<i>Smaragdus</i>
2nd Row	<i>Anthrax</i>	<i>Sappheiros</i>	<i>Iaspis</i>
3rd Row	<i>Ligurion</i>	<i>Achates</i>	<i>Amethystos</i>
4th Row	<i>Chrusolithos</i>	<i>Onuchion</i>	<i>Bērullion</i>

COMPARISON OF THE ABOVE FOUR DESCRIPTIONS.

The arrangement of the stones in the Breastplate, according to the Authorised Version (A.V.), the Septuagint Version (S.V.), the Jewish Antiquities of Josephus (J.A.), and the Vulgate Version (V.V.), respectively, is therefore as follows:—

	No. 1.	No. 2.	No. 3.
1st Row	A.V. <i>Sardion</i>	A.V. <i>Topazion</i>	A.V. <i>Anthrax</i>
	S.V. <i>Sardion</i>	S.V. <i>Topazion</i>	S.V. <i>Smaragdus</i>
	J.A. <i>Sardonuz</i>	J.A. <i>Topazion</i>	J.A. <i>Smaragdus</i>
	V.V. <i>Sardion</i>	V.V. <i>Topazion</i>	V.V. <i>Smaragdus</i>
2nd Row	A.V. <i>Smaragdus</i>	A.V. <i>Sappheiros</i>	A.V. <i>Adamus</i>
	S.V. <i>Anthrax</i>	S.V. <i>Sappheiros</i>	S.V. <i>Iaspis</i>
	J.A. <i>Anthrax</i>	J.A. <i>Iaspis</i>	J.A. <i>Sappheiros</i>
	V.V. <i>Anthrax</i>	V.V. <i>Sappheiros</i>	V.V. <i>Iaspis</i>

	No. 1.	No. 2.	No. 3.
3rd Row	A.V. <i>Ligurion</i>	A.V. <i>Achates</i>	A.V. <i>Amethystos</i>
	S.V. <i>Ligurion</i>	S.V. <i>Achates</i>	S.V. <i>Amethystos</i>
	J.A. <i>Ligurion</i>	J.A. <i>Amethystos</i>	J.A. <i>Achates</i>
	V.V. <i>Ligurion</i>	V.V. <i>Achates</i>	V.V. <i>Amethystos</i>
4th Row	A.V. <i>Bērullion</i>	A.V. <i>Onuchion</i>	A.V. <i>Iaspis</i>
	S.V. <i>Chrusolithos</i>	S.V. <i>Bērullion</i>	S.V. <i>Onuchion</i>
	J.A. <i>Chrusolithos</i>	J.A. <i>Onuchion</i>	J.A. <i>Bērullion</i>
	V.V. <i>Chrusolithos</i>	V.V. <i>Onuchion</i>	V.V. <i>Bērullion</i>

Thus each of the four descriptions differs from the other three in the statement of the arrangement; but the Septuagint, the Antiquities of Josephus, and the Vulgate agree in the alphabetical list of the stones (except that *sardonæx* is substituted by Josephus for *sardion*), and the Authorised Version differs from the other three, as already stated, through the inclusion of "diamond" and the omission of *chrusolithos*.

If the different arrangements of the stones of the Breast-plate, as given in the various versions, are compared, it will be seen that the Septuagint, the Jewish Antiquities of Josephus, and the Vulgate are in accord as regards the three stones of the first row (if *sardion* be taken to include *sardonæx*), namely, *sardion*, *topazion*, and *smaragdos*; further, all three accord as regards the four stones of the first column, namely, *sardion*, *anthrax*, *ligurion*, and *chrusolithos*.

As regards the remaining six stones, the Vulgate is most nearly in accord with the Septuagint, the two arrangements being—

	SEPTUAGINT.		VULGATE.	
	No. 2.	No. 3.	No. 2.	No. 3.
Second Row ...	<i>Sappheiros</i>	<i>Iaspis</i>	<i>Sappheiros</i>	<i>Iaspis</i>
Third Row ...	<i>Achates</i>	<i>Amethystos</i>	<i>Achates</i>	<i>Amethystos</i>
Fourth Row ...	<i>Bērullion</i>	<i>Onuchion</i>	<i>Onuchion</i>	<i>Bērullion</i>

there being a mere interchange of *bērullion* and *onuchion*.

For these six stones the arrangement given in the Jewish Antiquities of Josephus differs from that given in the Septuagint simply through the interchange of columns; the arrangement according to Josephus being—

	No. 2.	No. 3.
Second Row ...	<i>Iaspis</i>	<i>Sappheiros</i>
Third Row ...	<i>Amethystos</i>	<i>Achates</i>
Fourth Row ...	<i>Onuchion</i>	<i>Bērullion</i>

A Hebrew writer, in describing the arrangement of the stones, would begin with the stone on his right and describe them in the order right to left. A Western writer, on the other hand, would begin with the stone on his left and describe them in the order left to right. In translating from the Hebrew, a Western writer might translate either literally, adopting the Hebrew order, or more completely, adopting the Western order. But the above differences of statement of the arrangement are not such as would result in this way—for *ligurion* is the first stone of the third row according to all the above versions; reversal of the direction of reading would have made *ligurion* the last stone of its row.

It must therefore be inferred either that the descriptions correspond really to different Breastplates, the one in use at the time of the Septuagint translation, and the one in use in the time of Josephus, having been inexact reproductions of the destroyed original, or that the several versions given above were made from discordant Hebrew manuscripts, or that the translators have given different translations of the same Hebrew words, or that, in the description of the Breastplate, the original manuscripts of the Septuagint and Vulgate Versions and the Works of Josephus are not verbally identical with the printed editions of later times.

F. ANOTHER DESCRIPTION OF THE BREASTPLATE BY JOSEPHUS.

It remains to be mentioned that Josephus described the Breastplate, not only in his book on the Jewish Antiquities, but also in that on the Jewish Wars, and that these two descriptions, as they have come down to us, although made by the same writer, are not in evident accord with each other. It is desirable to trace, if possible, the origin of their differences, and to ascertain which of the two descriptions is the more likely to be correct.

The account of the Jewish Antiquities was written last, namely in A.D. 93. It deals with the history of the Jews from the earliest times down to the twelfth year of the reign of Nero. It was published only in Greek and for the information of the Gentiles. The work was written at greater leisure than the one dealing with the Jewish Wars, and the author had thus more time for the consultation of old manuscripts. Speaking generally, the later book, as would be expected, is more accurate as regards the history of the times before Josephus, of which he could have no direct knowledge, than the earlier work. The description that it gives

of the Breastplate is precise in respect of both the stones and their arrangement, and is therefore one to which great weight must be given.

The account of the Jewish Wars was written hurriedly, eighteen years earlier; it was written by Josephus in his native tongue for the information of those Jews in distant parts who wished to become acquainted with the events which had culminated in the destruction of Jerusalem. It was afterwards translated by the author into Greek, and published for the information of the Western nations. It deals chiefly with the time of Josephus himself, but is prefaced by a sketch of the history of the Jews from the capture of Jerusalem by Antiochus Epiphanes in B.C. 170. Its description of the Breastplate (Book V, Chap. 5, par. 7) is much less precise than the one in the Antiquities; translated into English, but with the above names for the stones, it is as follows:—

“On the other part there hung twelve stones, three in a row one way and four in the other: *sardion*, *topazion*, *smaragdus*, *anthrax*, *iaspis*, *sappheiros*, *achates*, *amethystos*, *ligurion*, *onuchion*, *bērullion*, *chrusolithos*.”

Attention may be called to several points in this brief description.

1. Josephus uses the term *sardion* for the stone that in the Antiquities he calls *sardonax*.

This is not a real inconsistency: in the time of Josephus a red stone having a white streak in it would be rightly called *sardonax* or *sardion*, according as stress was, or was not, laid on the presence of the streak.

2. Josephus does not definitely state that the order of the names in the list is identical with the order of the stones in the Breastplate.

It is quite possible that he relied on his memory when writing the paragraph, and did not refer to documents. It would be much more difficult, even for a man who had often seen the Breastplate, to remember the order of the stones than their names. The object he had in view at the moment was merely to give a rough idea of the Jewish religious ceremonies, and in this respect the actual arrangement of the stones in the Breastplate had little or no importance.

3. Josephus does not arrange the names of the stones in threes or fours; the original manuscript, like others of that time, presumably had no punctuation at all.

If, however, we ourselves, attempting to discover how he came to adopt this order for the names, break up the list into successive triads, it will be seen that the first three triads, namely :—

<i>sardion</i>	<i>topazion</i>	<i>smaragdos</i>
<i>anthrax</i>	<i>iaspis</i>	<i>sappheiros</i>
<i>achates</i>	<i>amethystos</i>	<i>ligurion</i>

are the first three triads according to the Antiquities, but that in the third triad the order of the names is precisely reversed.

The fourth triad, namely :—

<i>onuchion</i>	<i>bērullion</i>	<i>chrusolithos</i>
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differs from that of the Antiquities in that *chrusolithos* is placed after, instead of before, *onuchion* and *bērullion*: the order is thus only partially reversed: complete reversal would have given the order—*bērullion*, *onuchion*, *chrusolithos*.

Josephus, having put the *ligurion*, the first stone of the third row, at the right-hand end of the row, may have placed the *chrusolithos*, the first stone of the fourth row, on the same side, remembering that he had seen the *chrusolithos* immediately below the *ligurion* in the Breastplate, but forgetting the order of the other two stones.

Or, again, this triad is identical with the fourth row of the Septuagint Version, but the order is precisely reversed. Josephus may thus have had the Septuagint Version in mind and have described the row in the Jewish fashion; having been accustomed from childhood to reading lines in the direction from right to left, he would be liable all through life to confusion of direction when expressing himself in a Western language.

Further, if Josephus, at the time of writing the account of the Jewish Wars, had attached any importance at all to the arrangement of the stones in the Breastplate, he would have refreshed his memory by reference either to the Holy Books of the Temple, which were then in his possession, or to the Septuagint Version with which he was familiar. The fact that eighteen years later, when giving a precise account of the Breastplate in the Jewish Antiquities, he adopted an order of the names which differs not merely from the order adopted by him in his history of the Jewish Wars, but from the orders given in the Holy Books and the Septuagint, at least as they are known to us, suggests either that the manuscripts accessible to him differed in this respect from those copies which

are preserved in our day, or that the stones of the Breastplate were different in his time from the stones which were in the Breastplate at the time the Septuagint translation was made. On the other hand, it is possible that our text of the Works of Josephus itself differs from the original.

3. THE STONES ON THE SHOULDER-PIECES OF THE EPHOD.

On each shoulder-piece of the Ephod, the vestment to which the Breastplate was attached, was a gold button having a precious stone set in it. The stones must have been of considerable size, for upon each of them were engraved the names of six tribes (Ex. 28, 9: A.V. Ex. 39, 6, or S.V. Ex. 36, 13).

The name of the stone in the Hebrew text as known to us is *shôham*. According to the Septuagint translators, who may not have seen the Ephod, for the character of their Greek indicates that they had long lived at Alexandria, the stone was *smaragdus*, and therefore green. According to Josephus, who had seen the Ephod, the stone was *sardomx*, and therefore red (with a streak of white in it).

The complete difference of colour suggests that these are not mere mis-descriptions of the same stones, but that the stones were *smaragdus* at the time when the Septuagint translation was made, and *sardomx* in the time of Josephus—a new Ephod having replaced the older one, perhaps after the capture of Jerusalem in B.C. 198 or B.C. 170.

The name of the middle stone in the fourth row of the Breastplate in our Hebrew text is likewise *shôham*, and this word is throughout the Authorised Version translated onyx.

The middle stone of the fourth row of the Breastplate, according to the Septuagint Version was *bērullion* (not *onuchion*), and it is probably for this reason that the Revised Version gives beryl as an alternative rendering to onyx for the stone having that position. As already stated, *bērullion* was not mentioned by Theophrastus, and may have been regarded by him as a variety of *smaragdus* (p. 55). In such case, the name of the stone set in the buttons and in the middle of the fourth row of the Breastplate may also have been *shôham* in the Hebrew text used by the Septuagint translators.

Professors Maskelyne and Sayce, accepting green as the colour of the *shôham*, have expressed the opinion that the stone known by that name in Septuagint and pre-Septuagint times was the stone

called *'siamu* by the Assyrians, and therefore the green turquoise of the present day ; that stone may have been regarded by the more ancient Greeks and Romans, and therefore by the Septuagint translators, as a variety of *smaragdus* and as a kind of *bérullion* ; later, in Pliny's time, it was probably included in *callaina*.

One more difficulty of interpretation may be mentioned.

The following phrase :—

“onyx stones, and stones to be set in (*or for*) the Ephod,
and in (*or for*) the Breastplate”

occurs in three places in the Authorised Version (Ex. 25, 7 ; 35, 9 ; 35, 27).

It is clear that only one kind of stone was in the mind of the writer of the Book of Exodus at the time of writing the word in these three passages which has been translated onyx ; and in fact, in our Hebrew text, the word is in each case *shóham*. The only apparent reason for special mention of *shóham* in these passages is that the *shóham* stone was set both in the buttons of the Ephod and in the Breastplate ; the other kinds of stone were set only in the latter. It is to be inferred from each of these passages that the stones set in the buttons were *shóham*, as definitely stated in the other verses mentioned. Yet in the corresponding passages in the Septuagint Version not one Greek word but two are used ; the stone is called *sardion* in two places (S.V. Ex. 25, 7 ; S.V. Ex. 35, 8) and *smaragdus* in the third (S.V. Ex. 35, 27). Either the same Hebrew word was translated both *sardion* and *smaragdus*, or there were two Hebrew words in these passages of their Hebrew text ; in the latter case it seems certain, from the sense of the passages, that one of the Hebrew words had been a result of mis-copying.

4. THE ORNAMENTS OF THE KING OF TYRE.

That the Hebrew manuscripts used by the several translators did actually differ from each other is very clear from the account of the Ornaments of the King of Tyre given in Ezek. 28, 13 : “Every precious stone was thy covering, the sardius, topaz, and the diamond, the beryl, the onyx, and the jasper, the sapphire, the emerald, and the carbuncle, and gold.” For, whereas the Authorised Version just quoted names only nine stones, places gold at the end, and makes no mention of silver, the Septuagint Version gives twelve stones, mentions both gold and silver, and places these two metals in the middle of the list.

The nine stones mentioned in the Authorised Version are all included in the twelve previously mentioned in the description of the Breastplate, namely :—*adamas*, *anthrax*, *bērullion*, *iaspis*, *onuchion*, *sappheiros*, *sardion*, *smaragdōs*, *topazion*; the three omitted being *achates*, *amethustos*, *ligurion*, the three stones in the third row of the Breastplate according to the Authorised Version, the Septuagint Version, the Vulgate Version, and the two descriptions by Josephus. This suggests that in the copying of the manuscript of Ezekiel the three stones that formed the third row of the Breastplate as described in the Book of Exodus had been accidentally omitted.

In the Authorised and the Vulgate Versions the order of mention of the stones in the description of the Ornaments of the King of Tyre is different; the two arrangements being as follows :—

AUTHORISED VERSION.

Sardion
Topazion
 [*Adamas*]
Bērullion
Onuchion
Iaspis
Sappheiros
Smaragdōs
Anthrax.

VULGATE VERSION.

Sardion
Topazion
Iaspis
 [*Chrusolithos*]
Onuchion
Bērullion
Sappheiros
Anthrax
Smaragdōs.

And in neither of these versions is the order of the nine stones of the Ornaments of the King of Tyre identical with any of the orders which have been assigned to the same stones in the various descriptions of the Breastplate of the High Priest.

On the other hand, in the Septuagint Version, not merely the names but also the orders of the names are identical in the descriptions of the Breastplate of the High Priest and the Ornaments of the King of Tyre; namely, *sardion*, *topazion*, *smaragdōs*, *anthrax*, *sappheiros*, *iaspis*, (silver, gold), *ligurion*, *achates*, *amethustos*, *chrusolithos*, *bērullion*, *onuchion*.

DIFFICULTIES OF TRANSLATION OF HEBREW TECHNICAL TERMS.

Not only did the Hebrew manuscripts used by the Septuagint and English translators differ from each other, but the Septuagint translators met with difficulty in translating the Hebrew technical terms, as will be clear from a particular instance.

In the Hebrew text corresponding to the Authorised Version, the word *shôham*, designating one of the stones of the Breastplate, occurs in several places where there is no reference to other stones, and where accidental interchange of technical terms by the copyist could not occur; in the Authorised Version, as already stated, the word is always translated *onyx*. On the other hand, in the Septuagint Version of 1 Chron. 29, 2, the word is translated as *soam* stones, indicating that the Greek technical term for a *shôham* stone was unknown to the translator, and that he merely transliterated the name: in Exod. 28, 9; 35, 27; 39, 6 (or S.V. 36, 13), the word is translated *smaragdos* stones; in Gen. 2, 12, as *prasinos* (*i.e.* leek-green) stone; (the *prasites* of Theophrastus was a precious stone of a verdigris-green colour, and the name *prasinus* was used in still later times to signify a particular variety of *smaragdos*, namely, the true emerald): in Exod. 25, 7, and 35, 9 (or S.V. 35, 8), it is translated as *sardion* stones: in Job 28, 16, as *onux*. Assuming that the word in all these places is likely to have been *shôham* in the Hebrew original of the Septuagint Version, as in the Hebrew original of the Authorised Version, these differences suggest that there were different translators even for different parts of the Book of Exodus, and that little care was taken to arrive at consistency in the translation of the technical terms.

TRANSLATION OF HEBREW INTO GREEK AND ENGLISH TERMS.

In the preparation of their text, the translators of the Authorised Version have regarded the Hebrew, Greek, and English technical terms in the first three columns below as equivalent; the fourth column contains the English names that, according to the above, would now indicate stones to which the corresponding Greek names in the second column would probably have been given when the Septuagint translation was being made, or, still later, when the Book of Revelation was being written; the Hebrew names may have had other significations in pre-Septuagint times.

HEBREW.	GREEK.	ENGLISH (A.V. 1611).	ENGLISH (1911).
✓ <i>Ahlâmâh</i>	<i>Amethustos</i>	Amethyst	Amethyst
			Oriental ruby
<i>Bâréqeth</i>	<i>Anthrax</i>	Carbuncle	Balas ruby
			Almandine
			Pyrope

HEBREW.	GREEK.	ENGLISH (A.V. 1611).	ENGLISH (1911).
<i>Léshem</i>	<i>Ligurion</i>	Ligure	Jargoon (yellow) Jacinth Quartz or Agate (yellow)
<i>Nóphek</i>	<i>Smaragdos</i>	Emerald	Emerald Amazon stone
<i>Ódem</i>	<i>Sardion</i>	Sardius	Sard Carnelian
<i>Pitdáh</i>	<i>Topazion</i>	Topaz	Peridot
<i>Sappír</i>	<i>Sappheiros</i>	Sapphire	Lapis lazuli
<i>Shámír</i>	<i>Adamas</i>	{ Adamant Diamond	{ Diamond Corundum
<i>Shěbó</i>	<i>Achates</i>	Agate	Agate
<i>Shóham</i>	<i>Onuchion</i>	Onyx	Onyx
<i>Tarshish</i>	<i>Bērullion</i>	Beryl	{ Beryl Amazon stone
<i>Yahălóm</i>	<i>Adamas</i>	Diamond	?
<i>Yúshěphéh</i>	<i>Iaspis</i>	Jasper	Plasma

In the Authorised Version both *yahălóm* (Ex. 28, 18; Ezek. 28, 13) and *shámír* (Jer. 17, 1) have been translated diamond, and *shámír* also twice as adamant (Ezek. 3, 9; Zech. 7, 12); as already stated, *yahălóm* cannot be rightly translated diamond; *shámír* may have been either diamond or corundum in the times of Jeremiah, Ezekiel, and Zechariah (about B.C. 628–510).

Possibly some of the differences between the Septuagint Version and the Authorised Version are due, not to the differences of the Hebrew texts, but to the different meanings assigned by the different translators to the same Hebrew words: it has been suggested, for instance, that *báréqeth* and *nóphek* ought to interchange meanings, and again that *nóphek* may be the equivalent, neither of *smaragdus* nor of *anthrax*, but of *chrysolithos*; *yahălóm* the equivalent, not of *adamas*, but of *onuchion*; *tarshish* the equivalent, not of *bērullion*, but of *anthrax*.

ANOTHER TABLE OF EQUIVALENCE.

Having regard to the improbability that the Breastplate continued in existence, and was unaltered, from the time of Moses to that of Josephus, notwithstanding the many disasters that befel the Jewish nation during so long an interval, and to the certainty

that the Septuagint translators found great difficulty in the assignation of Greek names to the stones mentioned in the Hebrew text accessible to them, the late Professor N. S. Maskelyne, F.R.S., formerly (1857–80) Keeper of Minerals in the British Museum, held that no weight at all should be attached to the Septuagint names or to those given by Josephus, and sought to discover the old meanings of the Hebrew words in another way—namely, by comparison of the names that have been given to stones in various Oriental languages and by determination of the species of the minerals found among Egyptian and Assyrian Antiquities.

After much study, Mr. Maskelyne suggested (1888), though only tentatively and with much hesitation, the following as a list of probable equivalents of the Hebrew names of the Breastplate stones:—

HEBREW.	ENGLISH.
<i>Ahlâmâh</i>	Onyx (?) or Amethyst.
<i>Bâréqeth</i>	Almandine ; Amethyst (?) or Emerald.
<i>Léshem</i>	Yellow Jasper (?) or Amazon stone.
<i>Nóphék</i>	Blue Turquoise.
<i>Ôdem</i>	Red Carnelian or Red Jasper.
<i>Pîddâh</i>	Garnet or Peridot.
<i>Sappîr</i>	Lapis lazuli.
<i>Shěbô</i>	Black-and-White Agate (?).
<i>Shôham</i>	Amazon stone or Green Turquoise.
<i>Tarshîsh</i>	Green Jasper or Citrine.
<i>Yahâlôm</i>	Glass or Blue Chalcedony or Beryl (?).
<i>Yâshêphêh</i>	Plasma.

5. OTHER STONES MENTIONED IN THE BIBLE.

(a) Other stones mentioned by name in the Bible are Alabaster and Crystal, and three which have had an organic origin, Amber, Coral, and Pearl.

Alabaster.—The *alabastrites* of Theophrastus was an onyx-marble (calcium carbonate) obtained in large masses from the neighbourhood of Thebes in Egypt.

In Pliny's time the most esteemed was of a honey-yellow colour "covered with spots curling in whirls and not transparent": it was considered defective when of a white or horn colour, or approaching glass in appearance. It was much

used for the preservation of precious ointments (Matt. 26, 7). The name alabaster is now generally given to a different compound of calcium, a sulphate (gypsum), a softer material.

Crystal.—The word occurs in the Authorised Version in Job 28, 17, and Ezek. 1, 22, and also three times in Revelation (4, 6; 21, 11; 22, 1). The Hebrew words in Job and Ezekiel are different, and are rendered in the Septuagint by the Greek words *hualos* and *krustallos*, respectively; *krustallos* is the Greek word used in Revelation.

The *krustallos* of Theophrastus was one of the hard, pellucid stones used by the seal engravers, and doubtless, like the *crystallum* of Pliny, was identical with the “rock-crystal” of the present time. Among the localities cited for *crystallum* by Pliny are “the crags of the Alps, so difficult of access that it is usually found necessary to be suspended by ropes in order to extract it.”

The word “glass” occurs several times in the New Testament as a translation of the Greek word *hualos*: the name *hualos* was at first given to any clear, transparent stone, but in later times was restricted to glass. In the Authorised Version of the Old Testament, “looking glasses” are mentioned in Exod. 38, 8, Job 37, 18, and Ecclesiasticus 12, 11.

Amber.—The Greek name *elektron* occurs in the Septuagint (Ezek. 1, 4; 1, 27; 8, 2) as a translation of the Hebrew word *hashmal*; the *elektron* of the time of Theophrastus and the Septuagint translators is the amber of the Authorised Version and of the present day. In Pliny’s time amber was an object of luxury, and ranked next to crystal.

Coral*.—The name occurs twice in the Authorised Version, both times in the Old Testament (Job 28, 18, and Ezek. 27, 16), and as a translation of the Hebrew word *râmôth*, but the correctness of the translation is doubtful.

Red coral has been highly esteemed since very ancient times. *Korallion* is described by Theophrastus as being red, cylindrical, resembling a root, and growing in the sea. In Pliny’s time it was especially prized by the people of India, the reddest and most branched being most valued.

* See also p. 22.

Pearl.*—The name “pearl” occurs in the Authorised Version in Job 28, 18, and also seven times in the New Testament. In the Revised Version the Hebrew word (*gābīsh*) in Job 28, 18, is translated “crystal,” not “pearl.” The *margarites* (New Testament) is mentioned by Theophrastus as being one of the precious stones, but not pellucid, as produced both in a kind of oyster and in the *pinna*, and as brought from the Indies and the shores of certain islands in the Red Sea.

(b) The meanings of the four Hebrew terms *bēdōlah*, *eqdāh*, *kadkōd*, and *pēnīnīm* have not been determined with certainty.

The first, *bēdōlah*, occurs twice (Gen. 2, 12; Numb. 11, 7), and is translated “bdellium” in the Authorised Version. Some commentators think that the name is that of the gum of an Arabian tree; others interpret it to be an “excellent, selected pearl.”

The second, *eqdāh*, occurs once (Isa. 54, 12); in the Authorised Version it is translated as “carbuncle,” and in the Septuagint as *krystallos*.

The third, *kadkōd*, occurs twice (Isa. 54, 12; Ezek. 27, 16), and in the Authorised Version is translated, like the Hebrew word *shēbō*, as “agate.” The true interpretation is very doubtful; ruby, zircon, garnet, and tourmaline have all been suggested.

The fourth, *pēnīnīm*, occurs in Job 28, 18; Prov. 3, 15; 8, 11; 20, 15; 31, 10; Lam. 4, 7. In the Authorised Version it is translated “rubies”; but in the Septuagint it is translated as being equivalent to “precious stones.” It has also been suggested that the word may mean “red coral,” as it has some likeness to an Arabic word meaning “branch”; it has also been thought that the word means “pearls.”

(c) Of the remaining materials mentioned in the text or marginal references of the Bible, the following are so well known that description is unnecessary:—

1. The Metals:—

Gold.

Silver.

Brass: really the material signified was generally bronze, *i.e.*, copper alloyed with tin; but sometimes, possibly, it may have been true brass, *i.e.*, copper alloyed with zinc.

Tin.

Lead.

Iron.

* See also p. 22.

The word translated "steel" in the Authorised Version is translated *chalkos* (*i.e.*, bronze) in the Septuagint.

2. The Inflammables :—

Coal.

Bitumen, Pitch (Slime).

Naptha (Naphtha).

Brimstone.

3. The Salts :—Common salt and nitre ; the latter being the *nitron* of former times, which was a carbonate of sodium, not the nitre of the present day.

The others are very indefinite in character, or of common occurrence, namely—

Clay, Mire, Ashes, Dust, Earth ;

and Rock, Stone (with Chalkstone, Gravelstone, Headstone, Millstone), Sand, Flint, Porphyry (Porphyre), Marble, and Lime.

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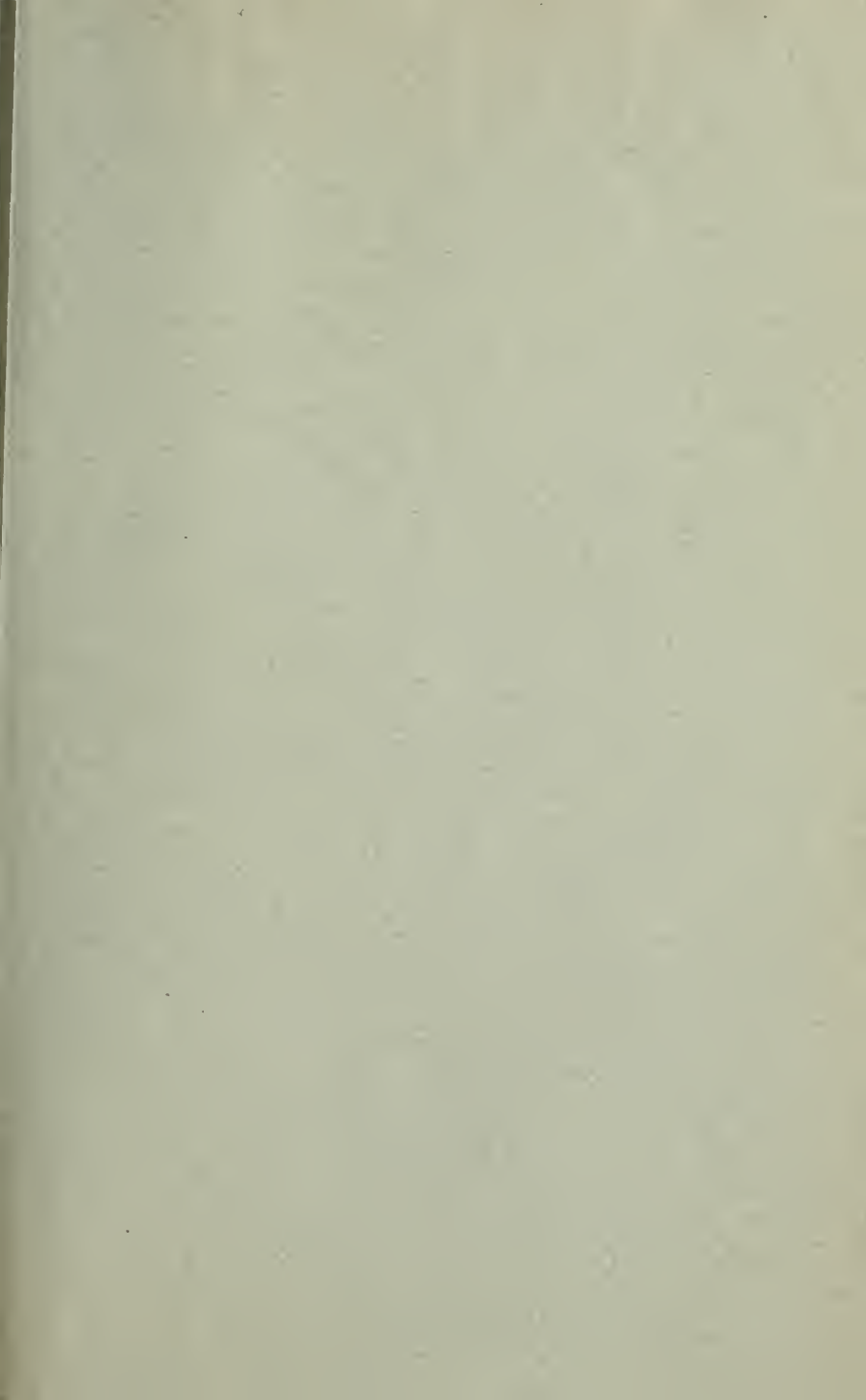
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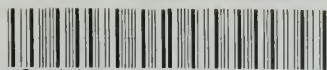
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